

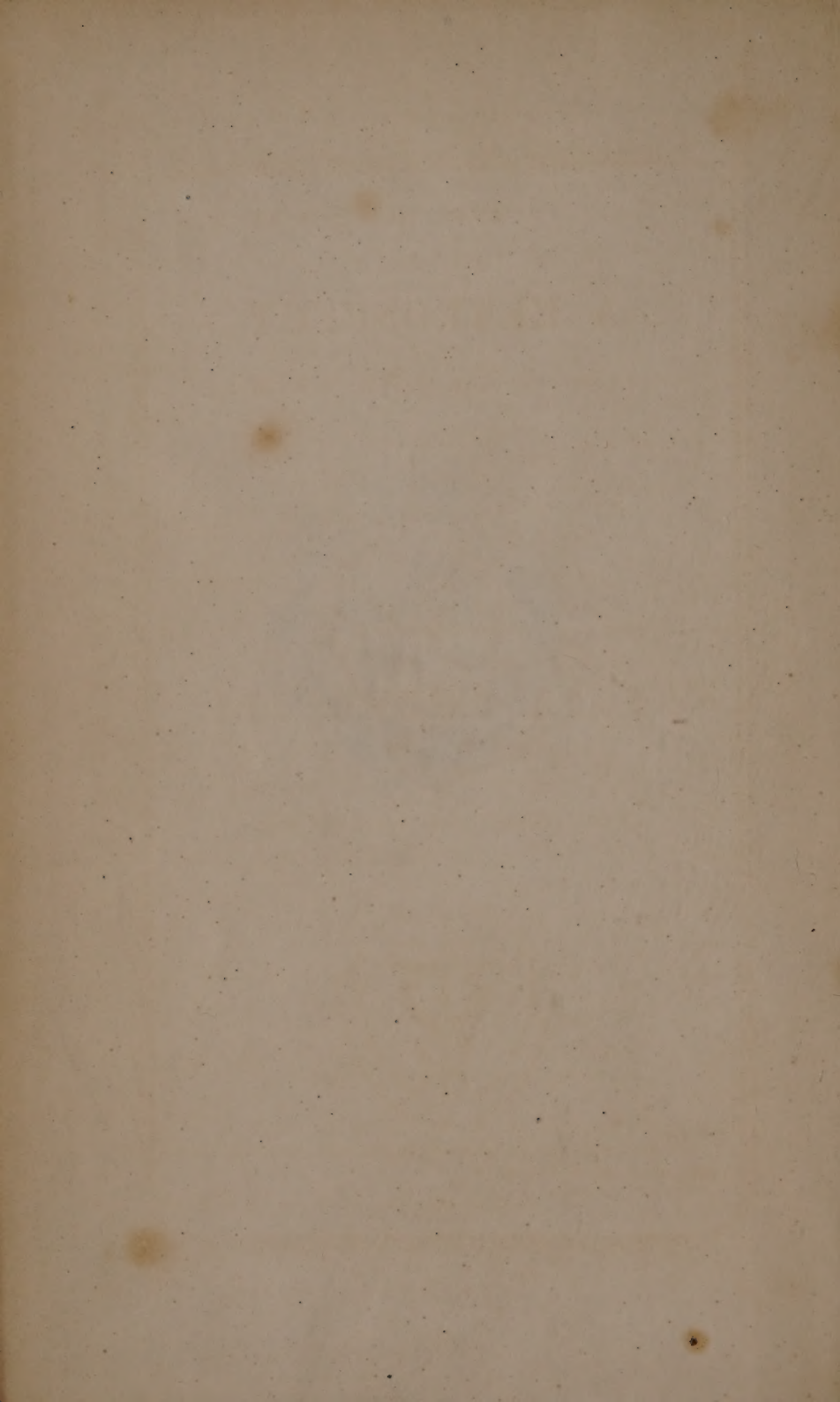
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London, Princes Street, Soho, 1844.

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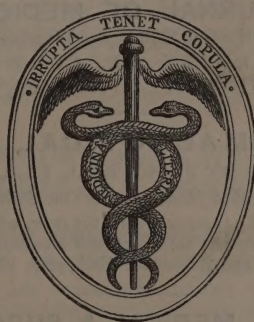
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quence—the brain becomes affected and the patient dies. May not the stomach cause a greater quantity of these acids to exist? and may not this be the cause of certain affections of the mind and nervous system?—or may not the stomach be deficient in supplying those chemical agents which may be essentially necessary to health? What effects would these products have upon the constitution, and upon certain diseases of the brain and nervous system? What effect would cerebrie acid have in certain deranged states of the mind? what effect oleophosphoric acid? These are questions that I am not at present prepared to answer; but in a short time hope to be able to place before the public some interesting particulars on this and on other points. Liebig has pointed out that certain chemical changes occur in the lungs, differing from other parts of the body, and certain chemical qualities are necessary for such changes to take place:—may not a deranged state of the lungs result from some defect in this respect? and may we not hereafter be able to furnish such remedies as may check or prevent such derangement occur-

ring, by supplying chemically the deficiency to the system, so as to render the functions of the lungs complete, or so near to nature's laws as to constitute health, and a due performance of respiration and circulation, so essential to life? This subject involves great interest; and when I contemplate what has been done by the introduction of new remedies—and we may take only one, “iodine and its preparations,” as an example—I look forward to an advancement in the scientific practice of our profession, to an extent of improvement that cannot be here anticipated, or even contemplated. Let us but continue our researches, and carefully watch and observe the result of the effect of such agents as we may be hereafter enabled to recommend.

In introducing new remedies many difficulties have presented themselves, which, I must own, could have been but little anticipated, particularly amongst members who fancy themselves branches of a liberal profession, who on many occasions have been pleased to term my endeavour to advance the practice of medicine “Quackery,” for giving those remedies of which I knew not the

dose or effects. Every preparation that has been found beneficial has been brought before the public, for the advancement of science and the promotion of the cure of disease ; and I have not been daunted by surrounding obstacles in furthering the investigation, or using my best exertions to allay the sufferings of those who have been placed under my treatment. If no new means were employed in the practice of our profession, what advancement could take place ? Science could not be improved ; Art must be at a stand ; and we, rest contented with our present knowledge. But as we live in an enlightened age, where improvement is hourly occurring, we are stimulated to exert ourselves with increased energy, so as to keep pace with the times, and be worthy of living in such an age of improvement, both in science, manufactory, mechanism, and enterprises of extraordinary magnitude, not known or even contemplated by our forefathers.

We are indebted to Mulder for the discovery of proteine and its compounds ; and Scherer analyzed this original matter prepared from animal albumen and fibrine, from the crystalline

lens, from hair, and from horn, and the results of all these analyses agreed with the formula, $C_{48} H_{36} N_6 O_{14}$, which is about identical with the blood in a healthy state. From a variety of practical observations, made during a period of nearly twenty-five years, a great portion of this time having been devoted to the bedside of the patient, I have been frequently struck with the want of power in the system to enable the constitution to bear up against disease; and as proteine entered into the formation of several of the tissues (being identical with blood) of the frame, I was led to investigate its effects upon the system. I found it beneficial in repairing certain decayed structures, in assisting the functions of nature in producing certain portions of the animal frame, which had become weakened from a want of solidity, and under various circumstances attendant with debility. Its use became serviceable. The preparation was made according to the directions given in Turner's Chemistry, and the results will be seen in these pages. But since that time Baron Liebig's researches have tended to disprove the existence of proteine; we must

therefore call it by some other name. It has been administered in numerous instances ; and a something can be procured which has been beneficial, and will be so in future ; therefore until we have a fresh term for this original matter, we must be at present satisfied by calling it “proteine.”

It was thought advisable in the arrangement of the present volume, first to enter into an investigation of the Anatomical Structure of the Mammary Gland, and to consider the changes the glands underwent during certain periods of life. This leads to a chemical consideration of the properties of the milk, and some chemical enquiries into the formation of certain tissues of the animal frame, together with some considerations of the functions of the body. Next follows the classification of the Diseases of the Breast, which have been divided into three. In the first class, I have duly described the functional and painful affections of the mammary gland ; and in this division the young mother will find some useful observations, which, if followed, may be serviceable in allaying pain and preventing many inconveniences attendant upon lactation. I have

here considered :—The slighter Disorders of Lactation—Milk Fever:—Excessive Secretion of Milk:—Undue Lactation :—Insufficient Secretion of Milk :—Suppression of the Milk :—Termination of the Period of Lactation :—Inflammation of the Breast :—Milk Abscess :—Lacteal Tumours :—Diseases of the Nipple :—Inflammation and Ecoriation of the Nipple :—Eczema :—and Retraction of the Nipple.

In the second class I have considered the Organic Lesions of the breast occurring independently of inflammation. And here will be found many interesting practical remarks, of service to those afflicted with abnormal formations, and also of use to practitioners having such cases under their management: I have here described Hæmorrhagic Congestion, or Ecchymosed State of the Breast:—Atrophy :—Hypertrophy :—Scrofulous Tumours :—Painful Tumours :—Chronic Mammary Tumours :—Neuromatous Tumours :—Neuralgic Affections of the Breast:—Hysterical Affections of the Mammary Gland :—Adipose Tumours :—Cartilaginous and Ossific Tumours :—Encysted Tumours :—Cystic and Hydatid Tumours :—and Pancreatic Sarcoma.

In the third class I have described Organic Lesion :—tumours, or formations of a malignant and contaminating nature. In entering upon this subject I thought it advisable, first, to make some observations respecting the state of the glands under certain stages of life, and of the strength of the constitution. And here will be found many practical remarks relative to the situation of cancerous and other affections of the breast. This leads to the consideration of the effect of climate on cancer, and on other diseases of the mammary gland. I then enter into an account of Scirrhus, or Carcinoma Simplex :—Cancer :—Carcinoma Reticulare :—Carcinoma Alveolare :—Fungus Hæmatodes, or Carcinoma Medullare :—Medullary Sarcoma :—Melanosis, or Carcinoma Melanodes :—and Carcinoma Fasciculatum. Then follow some physiological and chemical considerations respecting the functions of the body and the development of carcinoma; which terminates with a description of the peculiar state of the constitution necessary to produce cancer. I then enter into the consideration of many remedies and other means that have been recommended for the

treatment of malignant disease. I have here given the result of my experience of the effect of several new remedies that I have been induced to administer; and have finished the volume by entering into the detail of Cases that have been under my treatment. These Cases have not been confined merely to cancerous diseases of the breast; it has been thought advisable to give others, particularly where certain remedies have had considerable influence over diseased structure.

When I commenced my present undertaking it was not intended to extend the volume to the size it now assumes; but the desire to ascertain the opinion of others, and to investigate this subject as fully as I was capable, rendered it necessary to enter into much detail: I had to consult and study many authors in the arrangement of the diseases and subjects under consideration, and on several occasions have felt it a duty to give their opinions at some length. I am much indebted to the observations found in the following works, and the instruction I have acquired by a careful perusal of their pages.

Liebig's Organic Chemistry.—Turner's Che-

mistry :— Brande's Chemistry :— Sir Astley Cooper's Works :— Sir Benjamin Brodie :— Bostock's Physiology :— Samuel Cooper's Surgical Dictionary :— Abernethy :— John Burns :— Sir Charles Bell :— Travers :— Munro :— Wardrop :— Dr. Prout :— Dr. Todd :— Dr. Budd :— West :— Scarpa :— Adams :— Mayo :— Copland :— Carswell :— Hodgkin :— Sir Everard Home :— Rambotham :— Andrew Combe :— Justaman :— Müller :— Lizars :— Valpeau :— Cruveilhier :— Langeubeck :— Dieffenbach :— Laennec :— Gay Lussac :— Lobstein :— Maunoir :— Bechard :— Andrel :— Kerr :— Scherer :— Mayen :— Walther :— Jungken :— V. Graef :— Dr. Baum of Dantzic :— Prof. Betschler :— Bayle :— Cayol :— Breschet :— Ferrus :— Schwann :— Tiedmann :— The London Medical Gazette :— Lancet :— The Medical Times :— The Gazette of Health :— Dict. de Medicine, &c., &c. I beg here to thank these authors for their able assistance, and for the use I have made of their most valuable observations.

All reasonable means have been bestowed to render my labour complete, yet, after all, there may be certain parts which require correction and

improvement. Should the present volume ever be reprinted, my utmost attention will be paid to the criticisms that may be made upon it, and I shall most thankfully avail myself of all the information I can procure from this source. I shall continue my observation and investigation on the nature and character of the diseases that are here under consideration with unabated ardour, diligence, and perseverance ; and hope by following up this subject carefully to be able to bring before the public some further interesting details on a future occasion.

10, *Russell Place, Fitzroy Square,*

April, 1846.

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ON THE
STRUCTURE AND FUNCTIONS
OF THE
BREAST.

THERE are few, if any, subjects of medical science which should be approached with more careful investigation than that to which I purpose to devote myself in the following Treatise. It is the decree of the great Lawgiver that the increase of mankind shall, on the part of the female, be attended with labour and sorrow. To aid in the investigation of the various changes and diseases incident to the woman, both in her single and married state, has been one great inducement to me to examine into, and make known the results of my experience on the Structure and Functions of the Breast.

We cannot possibly overlook the very important bearing of this subject, upon the healthfulness of the rising generation ; any deranged state of the mother, especially as regards the

nourishment which her breast supplies to her offspring, will determine the health, growth, and development of the several structures of the human frame, which form its constitutional strength and power. It is therefore of the highest moment that a subject embracing consequences so full of interest to the mother, to the offspring, and indeed to our whole race, should undergo adequate consideration; and I humbly trust that my efforts will tend to elucidate many points connected with the functions to which I have before alluded.

The plan pursued will be, first, to detail the structure, development, changes, and functions of the mammary gland at different periods and under various circumstances of life. This will enable me to point out its natural and healthy structure, though occasionally some allusions will of necessity be made to its diseased conditions. Secondly, to enter into the classification of the complaints and the various diseases to which the gland is liable, their development and progress, carefully considering the various remedies and the most approved mode of treatment, which will necessarily constitute the largest part of our labour.

ANATOMICAL EXAMINATION INTO THE STRUCTURE AND FUNCTIONS OF THE MAMMARY GLANDS.

THE mammary glands before the age of puberty are generally scarcely perceptible, and even in dissection their presence is rarely observed, as they appear little more than cellular tissue; but by a careful examination we may bring into view, beneath the skin which covers the fore-part of the chest on either side, a thin greyish-yellow layer, which in after years constitute the glands. According to the best authorities it would appear that the uterine functions commence between the ages of twelve and nineteen, more frequently at the age of fifteen than at any other time, although there are some exceptions. For example, a child between six and seven years of age is now living in the parish of Harrow, who has these glands completely developed in every respect,

and puberty, to all appearances, fully advanced. The period of maturity commences at puberty, and ends about the forty-fifth or fiftieth year. It may be subdivided into the ages of youth and womanhood.

The age of youth is characterised by the countenance expressing passions more strongly. The girl deserts the games still followed by boys of equal age, upon whom she looks down with contempt, though, when they also have passed the period of puberty, she is timid and bashful in their presence.* At this period, the nervous system betrays unusual sensibility and susceptibility: the mind now acquires extended powers of emotion and passion, and the imagination becomes more lively and animated. The pelvic viscera, and mammæ are rapidly developed; the hips become enlarged; the thoracic viscera expand, increasing the mammæ; the lungs, the larynx, and even the arms acquire the contour of a maturer development. The intensity of vitality, and the resistance of the frame to baneful agents, are such that at this period mortality is less than at any other time of life.

* Elements of Physiology by J. Müller, M.D., p. 1659.

The mammary glands are two hemispherical bodies, placed on the anterior and a little towards the lateral parts of the thorax, attached loosely by cellular tissue to the surface of the pectoral muscles: they vary in size considerably in different females. About the age of fourteen in this climate, they become prominent. At the commencement of each catamenia they increase in size, and diminish, to a certain extent, after this period. There is a greater degree of vascularity in the whole structure of these glands at these periods, and their increase in size is owing to a flow of blood to the minute structure of these organs, which is attended with more nervous irritability; for the skin and glands themselves are tender and sensitive to the touch, and some females can hardly at these periods bear the pressure of the stays, or the pressure or weight of the cloth. There is an increased degree of heat accompanying their increase of size. These glands are made up of numerous lobes, or lobules of a whitish colour; the lower part of the glands corresponding to the surface of the pectoral muscles, and is flattened or somewhat concave; the outer surface is more or less of an irregu-

lar convex form. In each lobe innumerable branches arise, which, converging, form a duct, which, without communicating with those adjoining, open into sulci near the surface of the nipple. The tissue of the mammary gland is an assemblage of several lobes of different sizes, being closely connected together by dense cellular tissue, not containing fat; the anterior part of the gland is very uneven, and there may be observed upon it prominences in the form of ridges, more or less voluminous, and between these ridges depressions, filled up by adipose cellular membrane. The lobes entering into the structure of the mammary gland are placed near each other, and are by far more numerous towards the centre than at the circumference of the gland. Each lobe is composed or made up of several lobes, formed by rounded granulations of a rosy white colour, about the size of a poppy-seed. It is supposed that each of these granulations are composed or formed by the union of a number of small vessels. The glandular grains give rise to the rudiments of the lactiferous ducts, which unite into twigs, converge, unite again, and thus gradually become larger trunks; these collect towards

the centre of the gland, are flexible, extensile and semi-transparent. Those of the different lobes keep separate, so that there are as many ducts as there are lobes. The lactiferous ducts are accompanied into the substance of the mammæ by a tough, white, elastic substance, which follows them to the nipple. These ducts converge towards the base of the nipple, and terminate in sinuses or sulci, about sixteen or eighteen in number. These sinuses are not of the same size, some being little larger than the trunks themselves: they are of a conical form, very short, being connected to each other by cellular membrane. From the apex of these conical sinuses another set of vessels arise, which run along the centre of the nipple, keep separate, and open by distinct orifices at the surface of the nipple; but sometimes one or more of the lactiferous ducts terminate upon the surface of the areola.

The nipple (*papilla*) is a conical body, of a rosy tint, susceptible of a kind of erection, being composed of a tissue that by titillation, or when influenced by the passions of the mind, becomes more vascular. Upon the surface of the nipple the lactiferous ducts appear, the skin covering

the nipple is extremely delicate, of a redder colour than the integuments of the breast, very sensitive, wrinkled, reticulated, furnished with a great number of very fine papillæ. The orifices of the lactiferous ducts are surrounded by excessively minute hairs; the nipple is composed of tough cellular tissue, almost approaching to ligamentous structure, which incloses the lactiferous tubes: this tissue is extremely elastic, so that, when drawn out or distended, it readily recovers its former dimensions, the cause of the distension being removed. Around the nipple there is a circle of skin or disk. The areola:—this is remarkable for its extreme tenuity, but presents a wrinkled appearance, owing to the presence of several sebaceous glands, which are placed beneath it. The colour of the areola varies at different times of life, being florid, of a rosy tint, in young girls, of a pale brown in women more advanced in life, and in old age dull and livid; during pregnancy it is of a darker colour, in consequence of a change taking place in the *rete mucosum* entering into its formation, and of a reddish brown in women who have suckled children.

The sebaceous glands or follicles are ir-

regularly disseminated over the whole of the areola, forming an irregular circle near its circumference. There are small apertures to be observed around the nipple in the areola, which are the orifices of their excretory ducts: these glands are for the purpose of furnishing an unctuous fluid to defend the nipple and areola around it, preventing excoriation, and to protect the nipple against the saliva of the child.

The skin covering the mammary glands is extremely white, fine, smooth, and semi-transparent, softer to the touch and less coloured than that of the rest of the body; no wrinkles or folds are to be observed in a healthy state. Beneath the skin there is a large quantity of adipose tissue or fat, which constitutes a considerable portion of the bulk of the breast. It defends the glandular structure, but does not enter into, or communicate with the lactiferous ducts. The quantity of fat differs considerably in different women. Women with small breasts will frequently produce more milk in suckling than those whose mammæ are of a larger size. This adipose tissue fills up the interstices of the glandular structure of the mammæ, and there is more situated in front of it, which serves to

form one uniform mass to the appearance of the breast. In the want of ovaria, the breasts will remain, as in an early stage of life, undeveloped ; but a false conception is attended with a fulness of the mammæ, so that their existence must have considerable influence upon their functions. The mammary gland is furnished with arteries, veins, nerves, and lymphatics. The arteries are derived from the subclavian and axillary, and are branches of the external and internal mammary. The veins accompany the arteries, except the superficial, which are occasionally numerous ; they terminate in the axillary vein. The nerves are branches from the axillary plexus : some few branches are sent off from the intercostal nerves. The lymphatics are extremely numerous, and deserve our greatest attention : they may be divided into the superficial, or those situated upon the surface of the gland, and those situated beneath it, upon the pectoral muscle. The superficial run in a very tortuous manner, receiving the lymphatics from the glandular structure of the breast ; some of these unite to form glands, and these glands are extremely small in the healthy state : they are placed between the lobes, or lobules, that

form the glandular structure of the breast: some are placed immediately beneath the skin, between it and the adipose tissue; and other lymphatic glands are placed between the adipose tissue and the mammary gland: from these small lymphatic glands, lymphatic tubes ascend towards the axilla, and end in the axillary lymphatic glands. Other lymphatic vessels pass up to enter the lymphatic glands, above the clavicle at the lower part of the neck. The inferior lymphatic vessels, those at the lower part of the breast, communicate with the lymphatic vessels of the abdomen. The deep-seated lymphatic vessels pass beneath the mammary gland, receive a few lymphatic vessels from it, and some of them end in the axillary glands and some in the inferior cervical; and other lymphatic vessels penetrate the interstices of the ribs, near the sternum, and enter vessels which accompany the internal mammary artery.

An anatomical description of the mammary glands having already been detailed, it will be quite necessary for us to take a short survey of the changes these glands undergo during certain periods of life, such as puberty, menstruation,

parturition, lactation, and in the decline of life.

At puberty these glands gradually become completely organized; nature causes them to become prominent, vascular, and healthy in their structure; all their component parts are now minute and delicate in their texture; they are now capable of performing their important function in the animal economy, and they only require to be called into action to accomplish their proper office. In their full and healthy development they remain for some few years, having a uniform sympathy with the uterus during the different changes peculiar to the female. Their secretory power remains dormant, but constantly ready to act. The fat surrounding the glands is firm and hard. During the period of the catamenia the mammary glands become more vascular, sensitive, and tender; are larger, and have a greater degree of heat than at other periods. Afterwards they become of the same structure as before, having acquired some little increase of size: this is only during some few years, for if they are not called into action, after a certain time they begin to waste and diminish, the fat becomes softer, and the glands themselves become more flabby; but still, if re-

quired, they will readily perform their function. In this state, when the glands have been inert, and have gradually diminished in size, they are more liable to become the seat of certain affections from any exciting cause, such as undue pressure from the stay or any accidental blow. There is one position that these glands are placed in by stays that do not properly fit, which is of much detriment to their circulation, where pressure is applied in front and on the inner side of the glands near the sternum. This ill-directed pressure pushes the glands outwards too much towards the arm-pits, and causes a fold to take place in the skin, which produces pressure against one of the principal arteries that supply these glands ; (the external mammary ;) thus, then, in this situation the glands do not obtain a sufficient supply of blood, as they would do if they were in a natural position ; the nerves also are compressed, consequently their nervous energy diminished, and the lymphatic vessels obstructed, and in many cases that have come under my consideration, this trifling circumstance has been the primary cause of the glands becoming in an unhealthy state ; females ought therefore

to direct their attention to prevent this occurring : it is easily avoided by having the stays looser at the inner part of the bosom, or having two small bones instead of one at the front part of the stays. Any thing that can tend to prevent the gland becoming in an unhealthy state should not be looked upon as trivial, for it is far better to prevent disease when it is in our power to do so, by allowing the natural position of any part of the human body to be preserved.

Keeping the breasts supported is another essential object, as well, when the glands are in a healthy state as in disease ; for if we only consider that the glands, by their weight must cause them to hang down, and therefore there must be a strain upon the vessels that supply them, the cellular tissue, the nerves are all upon the stretch ; can they therefore so readily perform their office as when the glands are kept in their natural situation and supported ? Ladies, during the time of dressing, should consider this, and take care that the glands are supported by some loose and flexible material. This is more essential in a stout female, or in one who has been corpulent, than when the glands are small and

more firmly connected to the pectoral muscles ; but in all it is far better to support the glands continually, than allow them to fall out of their natural position. By the breast being allowed to hang pendulous, the loose cellular tissue below them becomes elongated, and the minute vessels are also considerably drawn out : when the glands are supported by the stays, these are compressed again, so that a frequent change takes place, which ultimately produces debility of the glands and a considerable variation of the natural figure. Where this has not too far advanced it may be relieved by sponging the skin covering the breasts with cold salt and water, or alum and water. Spirits of rosemary may also be advantageously employed, as also eau de Cologne and water. Sea-water will be of much use under such circumstances, and where this cannot be obtained, a solution of bay-salts and water.

At the first accession of the catamenia, and some little time after, at the usual periods of its approach, the *mammæ* become enlarged, painful, and tender, accompanied by increased heat and irritability : at these periods any accidental violence against the breast will most likely pro-

duce a greater degree of mischief than at other times, and will require more active means to be employed in order to subdue the inflammatory or other actions produced. The mammæ are so intimately connected with a healthy state of the uterus and its functions, that the treatment of all complaints of the breast must be regulated by a thorough investigation of the manner in which the uterine organs perform their functions. Nature requires for a healthy and regular state of the menstrual discharge a certain degree of constitutional power; a healthy development of the generative organs, with a degree of vigour and organic energy existing; the absence of all lesions that can in any way impair the ovaries, or interrupt the functions of the uterus; and it is necessary that such a state should continue during a period of thirty years, as the duration of the functions of menstruation is more frequently above than under this term. Any derangement in one or more of the organs necessary to be in health for the due performance of the menstrual period, will more or less affect the mammary glands, the severity depending upon the primary cause.

Prior to, and during each period of the catamenia, the mammæ sympathize with the uterine organs; they become swollen and tender, and a degree of irritability exists in the glandular structure and the nipple. As the discharge proceeds these symptoms disappear, and the mammary glands regain their former state: in some females, after this period, they become slightly diminished in size; and this is most frequently the case as age advances, and in an unmarried state.

The mammary glands undergoing these changes in a healthy state of the catamenia, experience a much greater derangement when the uterine functions are obstructed, as in amenorrhæa; and this derangement must necessarily depend upon the cause and duration of the obstructed uterine function; so in like manner these glands become affected in the various deranged states of the uterus and its functions, in menorrhagia, dysmenorrhæa, leucorrhœa, &c.

When the ovaries become diseased, the mammæ sympathize, and often undergo a change in their structure. It is not unusual where there is an enlargement of one of the ovaries that there is also an enlargement of the breast; and

they may both remain stationary for many years, affecting the patient but to a very slight degree, and that only at some particular periods. When the patient takes cold, it is not unusual that the pain should be felt either in the breast or in the lower part and side of the abdomen, in the situation of the enlarged ovary. In like manner, any derangement in the generative organs will produce a change in the natural and healthy structure and functions of the mammary glands.

We may next investigate the condition of these glands when nature calls their functions into full development. At an early period of pregnancy, often within the first two or three weeks ; the mammæ become enlarged, attended with pricking pains ; the areola round the nipple extends, changes its colour, becoming brown, even to a blackish hue, continuing to enlarge until the moment of delivery. About the fifth or sixth month, occasionally earlier, a little whitish serum can be pressed from the breasts, which gradually approaches more nearly to the appearance of milk ; the quantity secreted is sometimes very great, particularly towards the close of utero-gestation. Many women, however,

have no appearance of milk before delivery, and yet have an abundance afterwards. Soon after parturition, the infant is usually applied to the breast, in order to draw out and form the nipple, to encourage the flow of milk before the breasts become hard and distended. The function of secreting and excreting the milk now takes place. This occurrence is one of the most obvious and remarkable examples of the adaptation of the powers and functions of the body to the situations in which it may be occasionally placed. By the aid, probably, of the nervous influence, the blood circulating through the glandular structure of the breasts becomes converted into milk; the quantity varying according to the blood flowing to the gland and the quality of the blood to form that fluid. There is seldom any quantity of milk secreted until the second or third day, with the first child; but about this period the breasts become hot, painful, swollen, and hard; the pulse is accelerated, the sleep disturbed, slight chills occur, with some degree of febrile commotion, and occasionally some slight disturbance of the sensorium. These symptoms continue to various degrees, according to circumstances, until the se-

cretion of milk is at its height. The breasts become now extremely knotted, hard, loaded, and tender; the swelling and tenderness extending sometimes to the glands in the arm-pits, which become enlarged, and even as high as the glands above the collar bone. The secretion is now fully established, and excretion takes places: it is characterized by the milk oozing out of the nipples, particularly by gentle pressure: the infant taking the breast is attended with pain, followed by relief as the milk is drawn off by suction; the hardness, irregularity, and swelling diminish, and the process of lactation becomes fully established, which continues, according to a variety of circumstances, varying in the period, for a short or long duration; some mothers nursing their offspring for eighteen months, or even a longer time; but it ought not to be continued more than ten or eleven months.

“ The composition of milk is such, that it is
“ capable of supporting animal life without any
“ other food. Its caseine and albumen serve
“ for the formation of blood and for the nutri-
“ tion of the animal tissues, while its sugar and
“ fat supports respiration; and it furnishes,

“ besides, all the salts which the body requires.

“ The following table exhibits the composition of the milk of woman, of the ass, and of the cow.” (*Henry and Chevallier.*)

	Milk of		
	Woman.	Ass.	Cow.
“ Cheese or Caseine	1·52	1·82	4·48
Butter	3·55	0·11	3·13
Sugar of Milk	6·50	6·08	4·77
Salts and Mucus	0·45	0·34	0·60
Water	87·98	91·65	87·02

100,000 100,000 100,000*

When the mammary glands perform their functions regularly during lactation, the mother's health is better than at any other period. Her appetite is excellent ; the sleep she has is sound and refreshing ; her spirits are free, and her temper cheerful. Should the nurse fail in any of these respects, suckling will be less beneficial either to herself or infant. If she fails in the greater number, particularly in appetite or sleep, she ought to decline the office. Every mother should, for her own sake as well as her infant's, attempt to suckle. Weak and nervous constitutions dread in-

* Turner's Chemistry, p. 1198. Seventh Edition.

creasing their complaints ; but they should make the attempt, as weak habits have suckled with advantage to themselves ; and the attempt should not be given up, except the child suffers from restlessness, or becomes uneasy : if it frets and pines, a healthy nurse ought to be procured. Every young mother must reflect that she has to give up most amusements ; that if she cannot, when her child, by the most pathetic cries demands, yield it a genial, balmy food, uninjured by fatigue, agitation of mind, or indigestion, let her resign her task, consoling her mind by the reflection that if she persisted she might destroy the health and constitution of her infant ; and by forsaking her duty in this respect, she adds a still greater one to her offspring, for she sees it increase in health, strength, and size, and must observe her own system generally improve.

The infant depends entirely upon the nourishing quality of the milk which contains only one nitrogenised constituent, known under the name of caseine ; besides this, its chief ingredients are butter (fat), and sugar of milk.*

* Liebig's Organic Chemistry, p. 51.

The child receives in the form of caseine, (which is distinguished from fibrine and albumen by not coagulating when heated,) the chief constituents of the mother's blood. To convert caseine into blood no foreign substance is required; and in the conversion of the mother's blood into caseine no elements of the constituents of the blood have been separated. When chemically examined, caseine is found to contain a much larger proportion of the *earth* of *bones* than blood does, and this in a very soluble form, capable of reaching every part of the body. Thus, even in the earliest periods of life, the development of the organs, in which *vitality* resides, depends on the supply of a substance identical in organic composition with the chief constituents of blood.* This may account for hereditary disease extending over a variety of generations, as scrofula, gout, cancer, &c.

"The young disease, that must subdue at length,
Grows with our growth, and strengthens with our strength."

POPE.

The milk when first formed is said to contain some quantity of colostrum, acting as an

* Leibig's Organic Chemistry, p. 52.

aperient, which serves to evacuate the large intestines of the infant, which are loaded with the meconium. The properties of the milk vary, both in its essential qualities and appearance during the usual period of lactation, depending upon the bodily health of the nurse, state of mind, mode of living, diet, &c. At an early period it abounds with cream; is thick and yellowish: it soon assumes its usual appearance, becoming thin, blueish, and sweet, with a pleasant odour. It is altered by moral emotions, particularly of a violent kind; by remaining in hot and close rooms; by diet, repletion, and medicine; and it may be so changed, that the infant will relinquish the breast instantly upon tasting it. Aperient medicine will frequently affect the child more than the mother. The milk may become changed in its colour, by the mixture of a little blood with it, from the interior or even exterior of the nipple; and it may be influenced by any biliary or other attack of the mother. Human milk, when in a healthy state, scarcely becomes sour after a long period. It never passes either into the vinous or putrid fermentation. The cheese which it affords is finer and more tender than that of any other milk, but

does not form a mass. Human milk differs essentially in different women, and even in the same woman at different times. Much must depend upon the nourishing of the infant, upon the quality of the milk; upon a due performance of the mammary glands, they being in a state of healthy structure to secrete and excrete the milk. If these glands have been previously in an affected state by inflammatory or other actions, it would appear obvious that they cannot be so capable of forming a fluid so healthy; and so important to the infant. Debility of the constitution generally may prevent the milk being secreted of that quality which will benefit the growth of the offspring, tending only to nourish the body, but insufficient for the purpose of growth; at the same time weakening the mother and child. It has been pointed out that the milk secreted from the blood of the mother, serves to nourish the child by being converted into blood again. Now, by the observations of Liebig, an authority that we must give the utmost credit to, he states, that from the blood, that is the compounds of proteine in the blood, all the animal tissues are derived: some of these are com-

pounds of proteine, others have no longer the character of such compounds ; but in all cases they are derived from proteine. The chemical formula of dried blood when analyzed yields $C_{48}H_{39}N_6O_{15}$ which is proteine. $C_{48}H_{36}N_6O_{14} + HO + H_2$ (*Playfair and Boeckmann*.)* Dried flesh gave the same formula as dried blood, and also some other component parts of the animal texture. Proteine can be obtained easily from vegetable albumen, fibrine, or caseine, dissolved in a moderately strong solution of caustic potash, and the solution heated for some time to 120° , the addition of acetic acid causes the formation of a gelatinous precipitate. When well washed and dried, this is proteine ; it forms a yellowish brittle mass, insoluble in water and alcohol.† Five pounds of the fibre of beef will produce about three ounces of proteine. Its quality is highly nourishing, and it may be given in sugar : to weakly infants it bids fair to be of the greatest service, and in delicate constitutions, when the blood is insufficient for the secretion of a healthy milk, there is little doubt that it

* Turner's Chemistry, p. 1192.

† Turner's Chemistry, p. 1184.

will be highly beneficial, as it is identical in composition with the chief constituents of blood, animal fibrine, and albumen, and therefore it at once gives the essential properties of nourishing the frame and increasing its growth and strength. Where nourishment is necessary for the restoration of certain parts of the body, it is most highly useful. Ten grains given to an adult, combined with sugar, in the form of a powder, or with strong barley-water, will be more beneficial than four grains of the disulphate of quinine, and will even do more than that most useful preparation, under certain circumstances, in the restoration of various parts of the animal economy. After reading the observations of Liebig respecting proteine, I was induced to administer it to several patients, and have carefully watched its effects; and from my personal observation can most strongly recommend it as a medicine likely to prove highly beneficial. In scrofula its exhibition has been extremely serviceable, and no doubt it will prove very useful in other diseases. In a constitution where the milk is not of a sufficient quality to satisfy the child or to give it nourishment, or where the mother feels weak and debilitated

from the act of nursing, proteine will be of service, not in the shape of diet, but in a medicinal point of view, to strengthen the secretion and the system generally, not only of the mother but also of the child.

It may assist us as we advance to the diseases hereafter under our consideration, if we now take a short view of the chemical characters of some of the tissues of the animal economy. It may tend to promote our scientific inquiries into this subject, which is of considerable importance in respect to the formation of the natural structure of the frame, which knowledge can alone enables us to investigate and understand a diseased state of any part of the body.

COMPOSITION OF ORGANIC TISSUES.

	C.	N.	H.	O.
Albumen	48	6	36	14 + P + S*
Fibrine	48	6	36	14 + P + 2 S
Caseine	48	6	36	14
Gelatinous tissues, tendons	48	7.5	41	18
Chondrine	48	6	40	20
Hair	48	6	38	16
Arterial Membrane	48	6	38	16

* The quantities of sulphur and phosphorus here expressed

“ The composition of these formulæ shows that
 “ when proteine passes into chondrine, (the sub-
 “ stance of the cartilage of the ribs,) the elements
 “ of water with oxygen have been added to it;
 “ while, in the formation of the serous membranes,
 “ nitrogen also has entered into combination.
 “ If we represent the formula of proteine, C_{48}
 “ $N_6H_{36}O_{14}$ by Pr., then nitrogen, hydrogen,
 “ and oxygen have been added to it in
 “ the form of known compounds; and in the
 “ following proportions, in forming the gela-
 “ tinous tissues, hair, horn, albumen, mem-
 “ brane, &c. :—

Membrane, &c.	Proteine.	Ammonia.	Water.	Oxygen.
Fribine, Albumen.....	Pr.			
Arterial Membrane	Pr.	. . .	+ 2 HO	
Chondrine	Pr.	. . .	4 HO + 20	
Hair, Horn	Pr.	+ NH_3	. . .	+ 30
Gelatinous Tissues	2 Pr.	+ 3 NH_3	+ HO + 70	

“ From this general statement it appears that
 “ all the tissues of the body contain for the same
 “ amount of carbon, more oxygen than the
 “ constituents of blood. During their formation

by S. and P. are not equivalents; but only give the relative proportions of these two elements to each other, as found by analysis.

“ oxygen, either from the *atmosphere* or from
“ the *element* of *water*, has been added to the
“ *elements* of *proteine*. In hair and gelatinous
“ membrane, we observe, further, an excess of
“ *nitrogen* and *hydrogen*, and that in the propor-
“ tion to form *ammonia*.

“ Chemists are not as yet agreed on the
“ question, in what manner the elements of
“ sulphate of potash are arranged; it would
“ therefore be going too far were they to pro-
“ nounce arterial membrane a *hydrate* of *pro-*
“ *teine*, *chondrine* a *hydrated oxide* of *proteine*,
“ and hair and membranes compounds of *ammo-*
“ *nia with oxides of proteine*,”*

The brain and nervous matter are the most important parts of the frame, for without nervous matter the healthy functions cannot be carried on: an investigation into their formation may assist our views in other parts of these pages, and we may therefore here devote a little consideration to this subject.

“ BRAIN AND NERVOUS MATTER.—*Nervous*
“ *matter* is distinct from all other animal tissues,
“ and is produced by the animal system exclu-

* Liebig's Organic Chemistry, p. 127.

“ sively. In composition it is intermediate be-
“ tween fat and the compounds of *proteine* ;
“ containing nitrogen, which is absent in fats,
“ but in far smaller quantities than *proteine*
“ does ; and being, on the other hand, much
“ richer in *carbon* than *proteine* or its com-
“ pounds. It appears likewise to contain *phos-*
“ *phorus* as an essential ingredient.

“ From the recent researches of Frémy, brain
“ appears to contain a peculiar acid, analogous
“ to the fatty acids, which he calls *Cerebric acid*,
“ and which contains *nitrogen* and *phosphorus* ;
“ this is mixed with an albuminous substance,
“ with an oily acid—the *oleophosphoric acid*,
“ with *cholesterine*, and finally with small quan-
“ tities of *oleine* and *margarine*, and of *oleic*
“ and *margaric acids*. The two acids peculiar
“ to the brain and nervous matter occur some-
“ times free, but generally combined with *soda*,
“ or with *phosphate of lime*.

“ Cerebric acid is extracted by *ether* from the
“ brain, after it has been exposed to the action
“ of *boiling alcohol*, which coagulates the albu-
“ men. The matter deposited, on cooling by
“ the ether, is a mixture of cerebric acid, gene-
“ rally combined with *soda* or bone-earth,
“ *oleophosphate of soda*, and a little *albumen*.

“ This mixture is acted on by *alcohol*, acidu-
“ lated with sulphuric acid, which precipitates
“ sulphates of lime and soda, and albumen. The
“ filtered solution contains *cerebric* and oleophos-
“ phoric acids; cold ether removes the latter,
“ and the former is purified by solution in hot
“ ether and crystallisation.

“ When pure, it is white crystalline, and
“ pulverisable. In hot water it swells up like
“ starch, but does not dissolve. It contains
“ *phosphorus*, but no sulphur, if purified from
“ albumen. The phosphorus amounts to barely
“ one per cent., and it contains 2·3 per cent.
“ of nitrogen. It has the character of a fatty
“ acid, but its acid properties are feebly
“ marked.

“ OLEOPHOSPHORIC ACID.—This acid has
“ not yet been obtained quite pure. With the
“ alkalies it forms soaps, and its compound with
“ soda appears to exist in the brain. When it
“ is long boiled with water or alcohol it is
“ resolved into oleine and phosphoric acid.
“ This change is accelerated by acids, but it
“ takes place also spontaneously at the ordinary
“ temperature, only more slowly, and the pre-
“ sence of animal matter in a state of decompo-
“ sition seems to cause it to be resolved into

“ oleine and phosphoric acid. Thus, when
“ brain has been allowed to undergo partial
“ putrefaction, it no longer yields oleophospho-
“ ric acid, but oleine and phosphoric acid. It
“ contains 2 per cent. of phosphorus. The
“ oleine of this acid is identical with that of
“ human fat.

“ CHOLESTERINE. — This fat, as extracted
“ from the brain, in which it occurs in consider-
“ able quantity, has the same composition and
“ properties as the fat of biliary calculi, (*Couverbe ;*
“ *Frémy.*) Frémy has also succeeded in de-
“ tecting in the hair traces of the characteristic
“ fat acids of the brain. The grey portion of the
“ brain appears to be chiefly albuminous, while
“ the white portion consists of an albuminous
“ tissue, similar to the grey, but loaded with the
“ fats above described.

“ The softening of the brain in diseases of
“ that organ seems to be the result of putre-
“ faction, and is accompanied by the separation
“ of the oleine from the phosphoric acid. The
“ oleine itself also is decomposed, yielding free
“ oleic acid.

“ There *can be no doubt* that the brain and
“ nervous matter, (which is quite *similar to brain*),

“ are formed in the body from compounds of
“ *proteine*, either by the loss of some azo-
“ tized compounds, or by the addition of highly
“ carbonized products, such as fat. But we are
“ ignorant in what part of the body or by what
“ organ nervous matter is prepared. This point
“ requires minute investigation. In the mean
“ time, according to Chevreul, the fatty matters,
“ which occur in *small quantities in the blood*,
“ *are similar to those of the brain.*”*

“ The animal organism unquestionably pos-
“ sesses the power of forming, from the con-
“ stituents of its *blood*, the *substance* of its *mem-*
“ *branes* and *cellular tissue*, of the *nerves* and
“ *brain*, of the *organic* part of CARTILAGES and
“ BONES. But the blood must be *supplied* to it
“ *ready formed* in EVERYTHING but its *form*
“ —that is in its *chemical composition*. If this
“ be not done, a period is rapidly put to the for-
“ mation of blood, and consequently to life.

“ This consideration enables us easily to ex-
“ plain how it happens that the tissues yielding
“ *gelatine* or *chondrine*, as, for example, the
“ *gelatine* of skin or of bones, are not adapted for
“ the support of the vital process ; for their com-

* Turner's Chemistry, p. 1197.

“ position is different from that of fibrine or
“ albumen. It is obvious that this means
“ nothing more than that those parts of the
“ animal organism which form the blood do not
“ possess the power of effecting a transformation
“ in the arrangement of the elements of gelatine
“ or of those tissues which contain it. The gela-
“ tinous tissues, the gelatine of the bones, the
“ membranes, the cells, and the skin suffer in
“ the animal body, under the influence of
“ *oxygen* and moisture, a progressive alteration ;
“ a part of these tissues is separated, and must
“ be restored from the blood ; but this altera-
“ tion and restoration is obviously confined
“ within very narrow limits.

“ While in the body of a starving or sick
“ individual the fat disappears, and the muscular
“ tissue takes once more the form of blood, we
“ find that the tendons and membranes retain
“ their natural condition ; the limbs of the dead
“ body retain their connections, which depend
“ on the *gelatinous tissues*.

“ On the other hand, we see that the gelatine
“ of bones devoured by a dog entirely dis-
“ appears, while only the bone-earth is found in
“ his excrements. The same is true of man,

“ when fed on food rich in gelatine, as, for example, strong soup. The gelatine is not to be found either in the urine or in the fæces, and consequently must have undergone a change, and must have served some purpose in the animal economy. It is clear that the gelatine must be expelled from the body in a form different from that in which it was introduced as food.

“ When we consider the transformation of albumen of the blood into a part of an organ composed of fibrine, the identity in composition of the two substances renders the change easily conceivable. Indeed we find the change of a dissolved substance into an insoluble organ of vitality, chemically speaking, natural and easily explained, on account of this very identity of composition. Hence the opinion is not unworthy of a closer investigation, that gelatine when taken in the dissolved state, is again converted in the body into cellular tissue, membrane, and cartilage; that it may serve for the reproduction of such parts of these tissues as have been wasted, and for their growth.

“ And when the powers of nutrition in the

“ whole body are affected by a change of the
“ health ; then, even should the power of form-
“ ing blood remain the same, the organic force
“ by which the constituents of the blood are
“ transformed into cellular tissue and membranes
“ must necessarily be enfeebled by sickness. In
“ the sick man, the intensity of the vital force,
“ its power to produce metamorphoses, must
“ be diminished as well in the stomach as in all
“ other parts of the body. In this condition, the
“ uniform experience of practical physicians shows
“ that gelatinous matters in a dissolved state ex-
“ ercise a most decided influence on the state of
“ the health. Given in a form *adapted* for *assi-*
“ *milation*, they serve to *husband* the *vital force*
“ just as may be done in the case of the sto-
“ mach, by due preparation of the food in gene-
“ ral. Brittleness in the bones of graminivorous
“ animals is clearly owing to a weakness in
“ those *parts* of the *organism* WHOSE FUNCTION
“ it is to convert the CONSTITUENTS of the
“ blood into cellular tissue and membrane ;
“ and if we can trust to the reports of physi-
“ cians who have resided in the East, the
“ Turkish women in their diet of rice, and in the
“ frequent use of enemata of strong soup, have

“ united the conditions necessary for the formation both of cellular tissue and of fat.”*

It is essential to life that two important functions in the animal should be carried on, circulation and respiration. The first is carried on by the action of the heart, and the latter by the lungs.

“ By the expansion of the heart, an organ in which two systems of tubes meet, which are ramified, in a most minute network of vessels through all parts of the body, there is produced a vacuum, the immediate effect of which is, that all fluids which can penetrate into these vessels are urged with great force towards one side of the heart by the external pressure of the atmosphere. This motion is powerfully assisted by the contraction of the heart, alternating with its expansion, and caused by a force independent of the atmospheric pressure.

“ In a word, the heart is a forcing-pump, which sends arterial blood into all parts of the body; and also a suction-pump, by means of which all fluids of whatever kind, as soon as they enter the absorbent vessels which communicate with the veins, are drawn towards

* Liebig's Organic Chemistry, p. 99.

“ the heart. This suction arising from the vacuum caused by the expansion of the heart, is a purely mechanical act, which extends as above stated to fluids of every kind, to saline solutions, poisons, &c. It is obvious, therefore, that by the forcible entrance of arterial blood into the capillary vessels, the fluids contained in these, in other words, the soluble compounds formed by the transformations of organized parts, must be compelled to move towards the heart.*

“ Respiration is the falling weight, the bent spring which keeps the clock in motion ; the inspirations and expirations are the strokes of the pendulum which regulate it. In our ordinary time-pieces we know with mathematical accuracy the effect produced on the rate of going, by changes in the length of the pendulum, or in the external temperature. Few, however, have a clear conception of the influence of air and temperature on the health of the human body ; and yet the research into the conditions necessary to keep it in the normal state is not more difficult than in the case of a clock.”†

* Liebig's Organic Chemistry, p. 58.

† Liebig's Organic Chemistry, p. 29.

But to return to our subject. Sometimes, when the child is brought to the mother she feels an internal commotion of the breasts, influenced, no doubt, by the thoracic viscera. A maternal feeling may have an effect upon the secretion of the milk, for it will not flow so freely on the application of a strange child as of the woman's natural offspring. Exciting the attention, especially if this be accompanied with a little terror, will frequently wholly suspend the secretion. The connexion of the secretion of milk with the general nervous system is strongly marked. The maternal office of suckling is always attended with a calm serenity of mind, scarcely felt in other situations: and the suppression of milk, on its first appearance, with irritability, langour, or despondence. The last, indeed, sometimes attends the period of suckling, though the milk continues to flow, from causes that cannot be ascertained. It seems to affect the young and the strong rather than those of the middle period of life, or of weaker constitution, and more especially in their first confinement. The apprehension of death, in these rare and inexplicable cases, is, however, so strong that nothing

can conquer them, and the dejection so firmly fixed as to bid defiance to all persuasion or medical remedies. In some cases it has continued for some years, but pregnancy is usually an infallible cure.

It is stated upon authority that girls of the best character, by the irritation of a child sucking have become able to support it. A woman of eighty-eight is recorded, in the "Philosophical Transactions," to have suckled a grandchild. The number of teats or nipples in different animals correspond usually to the number of their young ; they are generally even : sometimes in women there is an additional nipple, or more, and sometimes these have been discovered only by accidental causes.

However successfully the office of lactation may be performed, as far as the infant is concerned, we are not to overlook the pernicious effect that it may sometimes have upon the weakly constitution of the mother. It too frequently happens that those who perform their maternal duty with the greatest solicitude, lay the rudiments of a future consumptive disposition, or cause it much sooner to make its appearance ; for the patient first complains of langour and gene-

ral weakness; loss of appetite; fatigue after exercise, though it be of the gentlest kind; and wearisome pains in the back and limbs. Soon afterwards the symptoms of general atrophy come on; the face in particular grows thin, and is marked by a certain delicacy of complexion and paleness about the nose, yet with a small degree of colour about the cheeks. In a short time, if the mother continues to suckle the child, she is seized with transitory stitches in the sides, under the sternum or in some other parts of the chest, accompanied with a short dry cough, and slight dyspnæa upon any moderate exertion; the pulse becomes frequent; morning sweats next make their appearance; abscesses and ulcers are often formed in the lungs; pus with mucus is expectorated; the general weakness increases; the emaciated patient is unable to support an erect posture; and at last dies exhausted. The weaning of the child at an early period of these symptoms, with judicious treatment, proper nourishment, change of air, and great attention by the patient to the treatment prescribed by the medical practitioner, will most likely prevent the unhappy results above described.

At the final cessation of the catamenia, the breasts become swollen and painful, sometimes to a considerable degree, accompanied with sickness, disorder of the stomach, and a capricious state of the appetite. At this epoch or soon after the mammary glands are more susceptible of the various diseases that attack them than in their more tender years ; any predisposition to disease, hereditary or otherwise, that has been previously dormant in the system, now becomes developed, making a rapid change in the natural structure of the gland, or a slow and gradual derangement in its texture or surrounding parts, according to the nature and malignant character of the disorder. At this period great caution becomes necessary as to the state of the gland, and any variation observed should be attended to with promptness, as the application of the necessary remedies at the first appearance of a change in the structure of the breast, is more likely to be serviceable than when it has crept on so as to be rooted, and has consequently caused a change in the natural and healthy tissues of the gland.

CLASSIFICATION OF DISEASES OF THE BREAST.

THE several authors* whom we have consulted on the important subject of classification, differ so materially from each other, that the selection of the best plan has been attended with some

* Sir Astley Cooper, in his Lectures divided tumours of the breast into hydatid or encysted—scirrhus tubercle—fungus hæmatodes—simple chronic tumour—irritable tumour—lacteal tumour—areola tumour—carcinoma in the nipple of man. In his work on Diseases of the Breasts he made three classes.—1st. Those which are the result of common inflammation, whether acute or chronic.—2ndly. Into those which arise from peculiar or specific action, but not malignant, and do not contaminate other structures.—3rdly. Into those which are only founded on local malignant and specific actions, but which are connected with a peculiar and unhealthy state of the constitution. Under the first class he placed acute inflammation—milk abscess—chronic inflammation—indolent abscess—lacteal tumour.—Under the second class; hydatid mamma—chronic mammary tumour—ossific tumour of mamma—adipose mamma—large and pendulous mamma—scrofulous mamma—irritable mamma—ecchymosis of mamma.

difficulty. After due consideration and reflection on this point, we have, however, decided on adopting, with some little variation, the arrangement which has been pursued by our respected friend and late colleague Dr. Copland.

We shall divide the diseases of the breast into—Functional and painful affections—Organic lesions, generally occurring independent of inflammation—and Organic lesions, tumours or formations of a malignant and contaminating nature : and consider under the first class :—

Slighter disorders of lactation.

Under the third class he brought carcinomatous mamma, and medullary sarcoma. Lizars objects to this classification, as some of the second class now and then degenerate into a malignant state; nay, we shall point out a case or two, where an affection in the first class took on a malignant form. Lizars then goes on to treat of acute inflammation—chronic inflammation—lacteal tumour—chronic hypertrophy, the adipose sarcoma, and large pendulous condition of the mamma. The fibrous, fibro-cartilaginous, cartilaginous, and tuberculated mamma—cystic sarcoma—pancreatic deposit—hydatid—scrofulous mamma—ecchymosed state of the mamma—irritable mamma—neuromatous tumour—carcinoma—medullary sarcoma. Mayo, says, that diseases of the breast fall under the following heads :—Acute inflammation and abscess—chronic inflammation—neuralgia—hypertrophy—atrophy—scrofulous disease—malignant disease and encysted tumour of the breast. Valpeau divides diseases of the mamma into 1st. Inflammation and their consequences :—2nd. Tumours of various kinds.

Milk fever.

Excessive secretion of milk.

Undue lactation.

Insufficient secretion of milk.

Suppression of the milk.

Termination of the period of lactation.

Inflammation of the breast.

Milk abscess.

Lacteal tumours.

Diseases of the nipple.

Inflammation.

Eczema.

Excoriation of the nipple.

Retraction of the nipple.

CLASS II.—Organic lesion of the mamma, generally occurring independently of inflammation.

Hæmorrhagic congestion or ecchymosed state of the mamma.

Atrophy.

Hypertrophy.

Scrofulous tumours.

Painful and chronic mammary tumours.

Neuromatous tumours.

Neuralgic affection of the breast.

Hysterical affection of the breast.

Adipose tumours.

Fibrous tumours.

Cartilaginous and ossific tumours.

Encysted, cystic, and hydatid tumours.

Pancreatic sarcoma.

CLASS III.—Organic lesion. Tumours or formations of a malignant and contaminating nature.

Scirrhus . . . Carcinoma simplex.

Cancer, fungus hæmatodes, medullary sarcoma, and melanosis.	{	Carcinoma reticulare.
		Carcinoma alveolare.
		Carcinoma melanodes.
		Carcinoma medullare.
		Carcinoma fasciculatum.

CLASS I.

FUNCTIONAL AND PAINFUL AFFECTION OF THE BREAST.

The functions of the breasts having been already explained: we shall now enter upon those disorders which occur at the period of lactation, during the time when it ought to be performed with health, both to the mother and her offspring. The mammæ may either perform their functions perfectly or imperfectly, or not at all, at the period destined by nature, (after parturition,) or after the functions have commenced: the secretion may suddenly and entirely cease, or

become so excessive as to injure the constitution of the mother. We have to consider the disorders occurring during lactation under the following heads :—

Slighter disorders of lactation.

Milk fever.

Excessive secretion of the milk.

Undue lactation.

Insufficient secretion of the milk.

Suppression of the milk.

Termination of the period of lactation.

Inflammation of the breast.

Milk abscess.

Lacteal tumours.

Diseases of the nipple.—Inflammation.—Eczema.—Excoriation and retraction of the nipple.

SLIGHTER DISORDERS OF LACTATION.—Soon after parturition, about the third or fourth day, the mammary gland, or both glands, may become so extremely hard, knotted, loaded, and painful, accompanied by considerable swellings, extending to the axillary glands, and above the clavicle, as to demand prompt attention. The patient will suffer from chills, disturbed sleep, and thirst; the pulse will be accelerated, and febrile

symptoms exist ; slight disturbance of the sensorium follows.—These symptoms may vary to a certain extent. To allay the thirst, copious draughts must be avoided, or the secretion of the milk will be increased : cooling, saline, effervescing mixture with an excess of acid may be sparingly taken ; the breast may be carefully and gently rubbed with spirits of camphor, spirits of wine, spirits of rosemary, or with a lotion of acetate of ammonia and camphor mixture ; or it may be fomented with decoction of poppies, with a drachm of the extract of hemlock to a pint of decoction. The alvine evacuations ought to be strictly regulated. Should there be any difficulty in the infant drawing the milk from the distended breasts, artificial means may be used, by the breast-pump, or the mother herself may draw the breast by procuring a glass, which is usually sold at some practical chemist's, or most earthen-ware shops.

MILK FEVER.—Consists of a febrile state of the constitution, after delivery, resulting from an irregular or defective secretion of the milk. About the third or fourth day after delivery, the breasts usually begin to be hard and painful, and if they do not become flacid, by the milk being se-

creted and flowing out of the nipples, or by the child sucking, more or less febrile symptoms ensue, dependent upon the state of the glands. Most of the complaints incident to women after parturition, result from the obstruction of the lochia in the uterus, or of the milk in the breasts, caused by any excited action, which necessarily induces fever, from the natural changes being obstructed even to a smaller or greater degree. This fever sometimes attacks women who endeavour too soon to allow the child to suckle, or allow the infant to continue too long at the breast, by which means the nipples, and consequently the breasts, are often inflamed, swelled, and obstructed; but women of a healthy constitution, who suckle their own children, have good nipples, and those whose milk flows freely, are very seldom subject to the complaint.

This disorder of lactation frequently depends upon the secretion being fully established, but excretion not taking place, so that the breasts are fully distended; a morbid, aggravated form of the local and general excitement attending the commencement of lactation. A fever is produced from the irritation of the milk, or its being too copiously generated, com-

encing by chills, followed by marked rigors, with severe pain and throbbing in the head, thirst, burning heat of the skin, with general excitement, and a quick or sometimes a full pulse, attended with great anxiety of countenance; the mind frequently becoming influenced by the milk remaining in the system. It rarely occurs to those who have early applied the infant to the breast, or had the milk properly drawn off: where there is a secretion of milk a due discharge is as necessary as that of the lochia; and the stoppage of either produces fever. Catching cold, or any cause of fever on the coming on of the milk, may occasion similar inconvenience. The more immediate causes depend upon a distended and loaded state of the vessels of the breasts, distinguished by the swelling of the glands in the axilla, and absorption of the milk and coagulation in the lactiferous ducts. It sometimes begins by a rigor and depression coming on after the breasts have been inflamed and painful, with thirst, headache, and burning heats. If the disorder be not violent, it may spontaneously vanish by a free and copious perspiration; at other times the symptoms become aggravated; flushed face, in-

tolerance of light and sound, hot and dry skin, furred and loaded tongue, excessive thirst, several rigors, a rapid, full, or hard pulse, urine scanty and of a high colour, and frequently a diminution of the lochia mark the more advanced form of this disorder, followed by inflammatory fever, obstruction of the lochia, miliary eruptions, phrenitis, &c.

The immediate causes are spirituous liquors, brandy caudle, or exciting beverages ; a stimulating or too plentiful diet, a heated or close apartment, large fires, too many bed-clothes, over-exertion, mental agitation, anxiety and emotion, imprudently exposing the arms and breasts, &c. to the cold air, so as to obstruct perspiration ; the retention or sudden stoppage of the necessary discharges, inattention to the state of the breasts during the latter stages of pregnancy ; the non-application of the infant, or its inability to take the nipple ; or the too long continuance of the child to the breast at one time ; constipation, &c. ; or any exciting cause of fever.

Treatment.—If the patient's habit be full or robust, a brisk, saline aperient should be freely administered, blood-letting has been recommended, but will be rarely required. The breasts must

be freely and carefully relieved. A young, strong, hungry child should be placed to the breasts ; linen cloths wetted in oil of camphor, or spirit lotion, should be applied all over the distended breast. It is manifest that a copious flow of milk must take place and be encouraged by every means ; cooling saline purgatives, cooling saline draughts, either effervescing, or otherwise with the usual antimonial preparation, may be sparingly taken ; also thin cooling diet. The removal of the causes of the complaint should be the first object. Compound infusion of roses, with small doses of sulphate of magnesia may be serviceable internally. These means will generally remove the disorder, and a free perspiration will take place. Should injudicious remedies be used, and the milk or lochia, or both be stopped, very dangerous disease may follow, and large depletions be required, with judicious and appropriate remedies, according to the nature of the symptoms that present themselves. No means ought to be used to repress the milk, for if it is driven suddenly back into the blood, the vascular system will be overcharged, and a train of evils will in all probability ensue. Too much caution on this point cannot be observed. A common plaister spread upon leather was for-

merly used, and said to prove serviceable, by keeping the skin warm, and helping, in some degree, to prevent it becoming so much distended. It is now not so generally employed.

As the crisis of this fever, miliary eruption frequently arises on the surface of the skin, particularly on the neck and breasts, by which the fever is carried off, and nothing ought to be given which will either increase or diminish the circulating force, but such remedies as will tend to keep out the eruption. Should the fever, instead of abating, be augmented, notwithstanding the continuance of the eruption, such remedies should be administered as diminish the circulation and produce sufficient evacuations; but should the pulse sink, and the eruption begin to recede inwardly, so that there be danger of the morbid matter falling upon some of the viscera, opiates and sudorific medicine may be useful, and blisters may be applied with much benefit.

In the treatment of those who do not intend, or from certain causes are prevented suckling their offspring, it will be necessary to prevent a too great turgescence in the vessels of the breast; to remedy which, such external applications, as by their pressure, coolness, or restringent force, may be applied to prevent the blood being carried

in such quantities to the breasts ; at the same time care ought to be taken to prevent it flowing to an internal organ, such as the brain. The breasts may be covered with cloths dipped in camphorated spirits, or with a lotion composed of two ounces of solution of acetate of ammonia, five ounces of camphor mixture, and one ounce of spirits, applied constantly with linen cloths to the breasts and arm-pits ; suitable remedies being administered internally, according to the symptoms present. Plaisters have been recommended, which act mechanically and prevent the skin becoming distended, but they cannot be considered as favourable even in this respect. The patient's diet should be strictly attended to, being of the lightest kind, and fluids given in small quantities, of an acidulated character. Commonly about the third day a fullness appears in the breasts, which will usually subside about the fifth or sixth day, by continuing the plan already advised, particularly if the milk flows out of the nipples, which ought to be encouraged freely, if the mother intends to suckle the child, if not, but sparingly, or otherwise there will be a too free determination of blood to the glands, which will cause the milk still to be secreted. Should the mother catch cold, or be of a full

habit of body, and not very abstemious, the tension and pain will increase, and the fever be accelerated. In this case, mild diaphoretics and nitre may be prescribed, and should a plentiful perspiration ensue, the patient will be relieved. Should these means, however, fail, and the fever increase, blood may be taken from the arm. Sometimes the patient will find relief from critical sweats, miliary eruption, discharge from the uterus, or frequent stools, mixed with curdled milk; but if none of these evacuations occur, and the inflammation increase, there will be danger of abscess, or should the fever increase to a very high degree, and the patient all of a sudden be free from pain, without any previous discharge or eruption, mortification may have taken place, the pulse will become low, quick, wavering, and intermitting; the countenance turns dusky and pale; she will soon be delirious, and die in a very short time.

EXCESSIVE SECRETION OF MILK.—The secretion of the milk occasionally may be greater than the infant requires, not only the secretion but also the excretion producing distention of the breasts; and they may become painful, swollen, and knotted, notwithstanding the discharge is free and copious. When the infant

is placed at the breast the milk flows so freely that it almost chokes the child, being unable to swallow it sufficiently quick, and by filling the mouth produces cough. This not only takes place once but repeatedly; so that the infant at last becomes fearful of taking the nipple, which, of course, only increases the inconvenience by producing a greater quantity of milk, till at last the quantity becomes so augmented as to produce more or less constitutional disorder. There may exist a want of power to retain the milk, producing a constant discharge, not only at the time of suckling, but continually; and this may occur to a greater or smaller degree according to circumstances. By the excessive secretion being established, a constant determination of blood takes place to the breasts of the mother, and all nourishment diverted from herself: her constitution becomes weak; the slight power in the system to retain the secretion diminishes, and the disorder thus increases, until her frame becomes exhausted. In certain cases a slow degree of chronic milk fever is present, and the breasts are swollen and painful, which may be followed by chronic debility, hectic fever; or the mother may sink into a state of marasmus, or suffer from dragging pains in the back and loins,

or fall into a consumptive state ; or any predisposition in the system existing to disease, it will become manifest and speedily develope itself in the system.

The cause of this excessive secretion at an early period of lactation may be the sudden disappearance or diminution of the lochia ; the breasts being kept too warm ; the use of spirituous liquors ; too much or too many fluids ; too much nourishing food ; the chamber being improperly ventilated ; too many bed-clothes, &c. Debility in the system generally, constipation, want of proper exercise, and too much indulgence in the house may also produce this disorder at any period of lactation.

Treatment.—Ascertaining the cause producing the disorder, and the employment of such means to remove it ; afterwards the treatment will depend upon the height of the disorder, and the effect it has had upon the system generally. Supposing the breasts are swollen, knotted, and painful, the secretion excessive, but the health not generally impaired, and the strength of the patient little diminished :—evaporating, cold, or astringent lotions applied over the breasts ; saline aperients, infusion of roses, with sulphate of magnesia, infusion of cascarilla, with

diluted sulphuric acid, low and moderate diet, will generally be sufficient to subdue the disorder. When the power of the system is insufficient to retain the milk, it may result from debility :—lotions of alum, zinc, and the other astringents have been recommended ; but they should be used cautiously, or otherwise they may suppress the secretion entirely, and be productive of mischief in other respects. Mineral acids, bark, quinine, and steel may be administered with service. In one case that came under my notice, the effect of small doses of the tincture of the sesquichloride of iron was very marked, and its use will be often beneficial. Bathing the breasts with sea-water or bay-salt and water, or sponging them with spirit and water, or a lotion made of two ounces of solution of acetate of ammonia to four ounces of spirits of rosemary and four ounces of spirits of wine. Attention should be paid to the internal treatment, as the remedies may affect the infant, by disordering the bowels or otherwise injuring the health. Citrate of iron, or citrate of iron and quinine, cold ablutions, shower-bath, may be also serviceable under proper management.

UNDUE LACTATION.—Lactation may be undue or improper, either in respect to the

mother's state of health or her ability to bear its lengthened continuance, and we have to view this subject with a double consideration. First, the state of the mother's health, and, secondly, the benefit or injurious effects the milk may have upon the offspring. There are certain constitutions unfit and improper to the performance of lactation, either for a short or long duration, and where it becomes our duty, for the purpose of preventing the propagation of certain diseases, most strongly to recommend that the mother should entrust her child to the charge of a nurse, both for her own immediate benefit and the ultimate welfare, health and even life of the child. There may be no disease existing, or any predisposition to disease in the mother ; but still a predisposition to the development of certain maladies in the child, as life advances ; and this may be inherent by intermediate marriages with members of the same family ; thus it has been clearly proved by authors of undoubted authority, that affections of the mind and other complaints are too frequently established by the intermixture of marriages with branches of one family. Now where this has occurred, consumption, scrofula, cancer, rickets, mania, &c. may result. These affections,

no doubt, are in the system of the infant at the moment of birth; but if the mother then nourishes the child herself, this increases the predisposition to the development of these complaints by supplying the constituents necessary for their future appearance; whereas by entrusting the child to a healthy nurse, the child may grow up in strength and health, and the chance of these affections making their appearance, thereby be considerably diminished. Of course, the same argument must hold good where there is present in the mother a predisposition to certain diseases; and here it must be manifest that the parent would not perform her duty with this knowledge, should she even attempt for a short time only to suckle her child.

The intermarriages of cousins have been fully established to produce weak and delicate children, by the admixture of the blood of one branch. Mania too frequently results from this cause; but it is presumed we have sufficiently entered into this subject, to advocate our doctrine, and to show that advantage may accrue by following the advice recommended.

Women of nervous temperament, weakened constitutions, predisposed to puerperal mania, insanity of any form, to consumption, or having

any disease or complaint existing ; those who have been chlorotic or very hysterical before marriage ought not to attempt to bring up their offspring.

It should also be duly considered, before the mother makes the attempt to bring up her own child, whether she is capable of extending the time sufficiently long for its nourishment, for a change in the milk produces a disturbance in the constitution of the infant, which it will be very advisable to prevent. We are not looking now at any causes that may arise during the period of lactation, but merely to the physical power of the mother, her bodily capability of bearing the fatigue, the anxiety, the restless nights, the waking hours, dependent upon any illness of the child or otherwise, her willingness to keep at home with her offspring, and her courage to avoid all excesses that may in any way tend to be prejudicial to her infant. These are considerations which will sway in the mind of the practitioner and the patient, and must have full force in determining the better plan to be adopted under the circumstances.

Many begin and continue to suckle for a time with success ; but owing to disturbed rest or want of proper nourishment, or a too prolonged

application of the infant to the breasts, both nurse and child ultimately suffer in health, and their constitutions become impaired, and injured. When the mother attempts to suckle her child, and undue lactation exists, it may be known by such symptoms as result from a protracted discharge or drain beyond the assimilating power and strength of the nurse. The child being placed at the breast of the mother she will feel a sudden sickness, with a sense of sinking in the chest at the pit of the stomach, pain in the back and loins, loss of appetite and sleep, lassitude, lowness of spirits, alternate heats and chills, followed by head-ache, loss of sight and memory, night perspiration, &c. These being present, no delay should take place in removing the infant from the mother, or more serious consequences will follow, which the power of medical science may not be able to relieve.

When undue lactation exists, weaning the infant is the first thing to be accomplished, and the rules pointed out in the termination of the period of lactation may be observed; and during the weaning, change of air, sea-bathing, shower-bath, light nourishing food, moderate exercise, cheerful society, vegetable tonics, compound

steel mixture, also other preparations of iron may be advantageously administered.

INSUFFICIENT SECRETION OF MILK.—During the period of lactation, it frequently occurs that the mother has not sufficient milk to satisfy the child, that after suckling the breast or breasts are completely drained, and the infant crying for more nourishment. The mother will feel a dragging sensation in the chest, a sense of weight at the pit of the stomach, pain in the back and loins, together with constitutional weakness, lowness of spirits, and restless nights. The insufficiency may be general or partial ; that is to say, the secretion may not be adequate for the wants of the child during the whole period of suckling, or the full quantity may not be secreted at one particular time, but at other periods be sufficient for the necessary supply of the infant. When the quantity is much below that which is requisite for the growth and health of the child, it will become a question whether the mother had better entrust the child to a wet-nurse, or supply her offspring with the milk secreted, making up the deficiency by feeding. The decision ought to be made with a full knowledge and a thorough investigation into

every circumstance that will tend to produce such a deficiency in the quantity requisite for the wants of the child, as by persevering in the endeavour to bring up the infant under the circumstances suggested, both the mother and child may become sufferers ; whereas by having recourse to a wet-nurse, both the mother and child will be benefited. The causes that may produce the want of a sufficient quantity of milk may be the same that prevent the secretion taking place at all ; the excretion not being great enough to impede the secretion, but sufficient to prevent the necessary quantity. A general weakness in the constitutional power may cause this to occur, and the debility may be increased by a trial to nourish the child ; or the secretion be still more deficient in quantity, which will at once point out the absolute advantage to be gained by the child being placed under the care of a proper nurse. Constitutional predisposition to certain disorders may produce the want of a proper quantity of milk ; and the endeavour to nurse the infant may tend to bring forward those disorders, which will also show the absurdity of such an attempt.

The partial deficiency in the quantity of milk may arise at any time during lactation, and depend

upon a variety of causes, the secretion returning again in its proportionate quantity. Thus over-exercise, late hours, increased exertion, bodily or mentally, want of nourishing diet, or of the usual quantity of beer, wine, or spirits, sudden discharges, sexual intercourse, &c. will tend frequently to produce this result.

SUPPRESSION OF THE MILK.—The secretion from the mammary glands may not take place, or may suddenly cease at any time of suckling, more frequently at an early period. The suppression may be primary or consecutive, total or partial. Primary, when the appearance of milk be not present; consecutive when a total or partial suppression occurs after lactation is fully formed, and this may take place in one or both of the breasts. At the usual period after delivery, the functions of the breasts may not be performed; they may become swollen and painful;—these symptoms subsiding and no secretion occurring; or one of the glands alone may fully perform its functions, and the other have some little signs of secretion, or no appearance of it whatever. When both *mammæ* do not perform their functions, it must depend upon some organic derangement in the glands themselves, or in the

adjacent parts supplying them with arterial or nervous energy; to the want of constitutional nervous, or other power, necessary nourishment, excessive discharges, acute or chronic inflammatory diseases, mental distress or anxiety, cold or astringent applications to the breasts, the pre-existence of organic maladies, or predisposition to disease—the development occurring after parturition, and to causes dependent upon accidental or other circumstances. The secretion may be prevented by the glands themselves being deficient in some of the anatomical parts necessary to their organization, or some one or more of their structures may be consolidated by accidental, inflammatory, or other consequences.

Lacerated wounds occurring across the chest, over the seat of the mammary glands, by causing the parts of the gland divided to become consolidated in the process of the healing of the wound, will sometimes, after delivery, cause suppression of the milk. A woman was admitted into the Middlesex Hospital in the year 1826, who had been knocked down by a horse that had run away with a cart, the wheel passed over her chest, which contused and lacerated both the mammary glands; sloughing took

place, the wound healed, and the patient was discharged cured. I have occasionally seen her since the accident. She has borne several children, but was obliged to bring them up by hand, as no secretion took place in either of the breasts, although every means were employed to induce the glands to perform their functions. Sometimes inflammation takes place in a part of the gland : an abscess forms, which when healed produces consolidation of the part of the gland itself, and this may cause the non-appearance of milk in that breast ; but then the other will perform its functions in a healthy manner. Scrofulous affections of the axillary glands, producing abscess and consolidation of the adjacent parts in the axilla, by involving the arteries or nerves supplying the gland, may cause suppression of the secretion of milk. Spinal complaints occurring at the lower cervical and upper dorsal vertebræ will produce suppression of the secretion of the milk, by the pressure the complaint will necessarily make upon the nerves supplying the glands. A case came under my care to exemplify this remark : a young married woman received a blow upon the back, between the shoulders, which produced chronic inflamma-

tion, causing loss of power in both arms: she was subsequently delivered of a fine healthy boy (her second child): there was no appearance of the mammary glands performing their functions, although she had been able to suckle her first child. The patient was cured under my care, and has had since another offspring; and the cause being removed, (the complaint in the spinal column,) the functions of the glands returned, and she was enabled to suckle her child with satisfaction to herself and benefit to her offspring. The suppression may result from the constitution being in a weak and debilitated state, caused by fever, inflammation, the want of proper nervous energy or strength in the system generally, by the previous mode of life of the patient; by her suffering at an early or more advanced age, from fits, chlorosis, hysterical affections, complaints of the lungs, grief, sorrow, anxiety, and trouble, disorders of the mind, puerperal mania, or insanity of any form.

The functions of the breast may not be called into action from the want of necessary nourishment. Thus the blood being weak, and the arterial system debilitated, the secretion of milk will not be formed, on account of the blood not

having sufficient of the constituents necessary for its production.

Excessive discharges will prevent the breasts performing their functions. Thus the cause may be hæmorrhagic, lochial, leucorrhœal, or other evacuations from the system generally which tend to weaken the constitutional power, by causing a determination of blood to other parts, excepting the glands themselves.

Acute or inflammatory disorders may require the necessary loss of blood, which seems to act in the same way as the preceding causes of this functional derangement. The sudden knowledge of any misfortune, mental distress, anxiety, fear, grief, mental irritation, alarm, &c. may prevent the breast secreting milk. A woman just confined hearing in an adjoining room the cries of one of her children that had accidentally set herself on fire, became so terrified that she could be scarcely pacified. In this case, no appearance of milk could be made to appear in either of the breasts.

The predisposition to disease, (the development taking place after delivery,) or the pre-existence of organic maladies may produce the same result. Thus a constitution predisposed to malignant

disease, may be set in action after delivery, instead of the functions of the breasts being established. A young Irish woman was admitted into the Middlesex Hospital, under my care, a week after her delivery, the child being dead: the breasts were inflamed and painful. The usual remedies were employed, and the breasts drawn; but malignant disease of both mammæ became fully developed, which made rapid progress, and soon destroyed the patient. The existence of a tumour in the breast, producing an organic obstruction in the gland, will necessarily impede the functions being performed. Scrofula, pulmonary, and other maladies will act under certain circumstances in the same way.

The application of cold to the arms, to the hands, or to the body generally may prevent the secretion being established. Other circumstances may occur to individual cases that will prevent the mother from being able to nourish her infant, pointing out the necessity of acquiring a knowledge of the cause of the want of milk previously to the recommendation of any plan of treatment.

Consecutive suppression of milk may occur at any time during the whole of the period of suck-

ling the infant ; and may depend upon several of the causes already mentioned ; but most frequently results from sudden fright, terror, fear, unexpected or melancholy news, grief, startling noises, thunder, depressing passions and emotions, disappointment, anger, vexation, want, misery, inanition, and starvation.

“ Whilst the suppression of the lacteal secretion
“ may proceed from the development of inflam-
“ matory or other acute diseases, these latter
“ may also arise from the suppression of milk
“ caused by mental emotion, or by other occur-
“ rences. In the former case it may be con-
“ sidered that the inflammation or sanguineous
“ afflux, constituting these diseases, creates a
“ diversion of the vital current from that quarter
“ where it is necessary for the continuance of the
“ lacteal secretion ; in the latter case either the
“ passage of the milk from the breasts into the
“ mass of blood, or the accumulation in it of the
“ constituents requisite to the formation of this
“ fluid creates such a state of vascular plethora,
“ or affects the blood in such a manner as
“ readily to kindle inflammation, or cause con-
“ gestion, effusion of serum, or other changes in
“ organs disposed to such maladies, either by
“ original conformation or by an acquired pre-

“ disposition. Dr. Locock states—and even
“ more remarkable facts of a similar kind have
“ been recorded by numerous writers of high
“ character—that he has observed, when bleeding
“ has been had recourse to in inflammatory
“ diseases, with sudden suppression of milk, that
“ the serum of the blood, when separated by
“ rest, has been white, opaque, and bearing
“ nearly all the characters of milk, excepting the
“ formation of cream on its surface. It may
“ also be observed that when the milk has been
“ driven back by active purgatives, a large
“ quantity of milk-like fluid may be seen in the
“ motions. However, a milky state of the se-
“ rum of the blood often attends the puerperal
“ states, independently of any suppression of
“ milk ; and I have seen in several cases some
“ years ago, in Queen Charlotte’s Lying-in Hos-
“ pital, the serum effused in the peritoneal
“ cavity, in fatal cases of complicated puerperal
“ fever, present a milk-like appearance, with
“ clots like the curds of milk ; and yet the secre-
“ tion of milk was not suppressed during the
“ disease. The same appearances have also been
“ observed in cases where a suppression of the
“ milk had occurred. In rare instances, when

“ the milk is suppressed, a vicarious discharge of
“ it, or of a fluid very closely resembling it, takes
“ place from various situations ; this has been
“ termed a translation of the milk, and in many
“ of such instances the general health has not
“ materially suffered. The situations where this
“ vicarious discharge has occurred are, the
“ mucous surface of the intestines ; of the womb
“ or vagina, in the form of leucorrhœa ; the
“ fauces and throat, the kidneys, &c.”*

Peritonitis, hysteritis, and other inflammatory disorders, will prevent the functions of the breasts being duly performed, and when these disorders appear soon after parturition, the breasts, instead of being enlarged and full, and having their proper degree of hardness, appear flabby, soft, and hang down, or fall to the side when the patient is lying upon her back : there may be a little or no milk ; and the elements of that secretion remaining in the system tends to encourage the inflammatory action, so that it would be highly beneficial to establish the functions of the mammary gland ; if the secretion does not soon take place, the breasts will seldom regain their healthy

* Copland's Dictionary, p. 675.

action, and the inflammation be in danger of continuing, or even increasing. Should the suppression arise from mental causes, sorrow, &c., the secretion is more likely to be established again in the mammary glands, particularly if the cause of its stoppage be removed. Change of air, change of scene, moderate exercise, good diet, warm and dry applications, if not carried to excess, will be of service ; mustard sinapisms applied to the mammary glands, made of one-third mustard to two-thirds linseed-meal, applied for forty or fifty minutes, will frequently cause the secretion to be established.

THE TERMINATION OF THE PERIOD OF LACTATION.—The length of time the child ought to be fed at the breasts depends upon several circumstances. The state of health of the mother and the child ; if both are in vigorous health, and the infant has cut several teeth, weaning may gradually be accomplished about the end of the ninth month ; if the child be weakly in constitution, the teeth not come forward, the nurse having a good supply of milk of a nourishing quality, it will be far better to continue nursing for a few months longer. The teeth not making their appearance points out

that the system is unfit for any other nourishment except the natural food of the mother. The child should have four or six teeth formed before weaning be accomplished, that is, supposing both mother and child are in a perfect state of health. When the mother feels, at the time of suckling her infant, a sinking at the pit of the stomach, a sensation of dragging at the back and loins, the appetite failing, general weakness, alternate heats and chills, with a degree of lowness of spirits, she should not delay weaning the child, or otherwise, very serious consequences may supervene. It is a duty she owes to herself and to her offspring to do so immediately, as she will both benefit herself and her child. Should the mother be again pregnant, she must wean her child immediately upon her becoming acquainted with the fact. When the catamenia returns and remains some time, it will be highly imprudent to allow the child to remain at the breast. When the infant seems hungry, even upon quitting the breast and when it is constantly seeking to be applied, but quits the nipple after having taken it some few minutes before with impatience and distressing cries, it will be highly beneficial, under such cir-

cumstances, to desist from applying the child to the breasts. When the child no longer lives, or when the mother does not intend to suckle her own child, it becomes necessary gradually to suppress the secretion, to prevent fever, internal inflammation, and even more serious consequences. Supposing some hereditary predisposition is known to exist in the system, or supposing that the mother has seen several, or even one of her offspring, grow up weakly and sickly, or sink at an early age, it will be her duty to find some healthy nurse, and see that the weaning be not delayed beyond the usual period to supply the child with sufficient of its natural food, wholesome, nourishing milk. It is by no means requisite or proper that the nurse should have a full allowance of wine, porter, spirits, and fermented liquors added to her usual diet ; it causes a preternatural fulness, and engenders disease. The health of country nurses is too frequently ruined by their removal into the families of the rich and opulent. Their mode of life becomes changed ; they have no laborious duties to perform ; take little exercise ; they become plethoric, sleepy, and indolent, and, being too well fed with luxurious diet, their

digestion becomes disordered, and ultimately engenders disease; deranging the milk, and rendering it unfit for the infant. Proper care should be taken by the mother to see that the diet of the nurse is plain and wholesome, and that her mode of life be continued nearly in the same way as when at home, some little extra only being allowed. Nature has endowed the mother with additional strength, by checking the periodical discharge, and therefore, if the nurse be strong and robust, the constitution will not require much additional food, beer, or wine; but if the constitution be weak, an extra quantity may be advantageously allowed. It has already been pointed out that the milk at first, some little time after delivery, differs from that secreted some few months afterwards, and it differs according to the age of the mother. She therefore, in engaging a nurse, should procure one about her own age, and confined at about the same time, in which case the nourishment for the child will be beneficial and tend to increase its strength and growth. The variation in the quality of the milk caused by the improper use of liquors, neglect, and anxiety of the mother, will produce infantile indigestion, which will be

the forerunner of other and more serious disorders, planting in the system a root for constitutional disturbance, which may ultimately make its further appearance by some accidental cause, or otherwise. At this early age the utmost caution ought to be observed, the delicacy of the circulating system of the infant, its respirative functions demand a strict observance of every precaution already advanced. Much more might be said on this important subject, but we feel if we enter more fully into it that we should be digressing from the more immediate nature of our undertaking.

The act of weaning should be gradually accomplished, for the sake of the general state of health both of the mother and child, and also to preserve the more natural state of the breasts; for if the secretion be too suddenly subdued, the glands change from a large to a small size too speedily, and a double mischief occurs. First, the gland is liable to become consolidated at one particular part, which will be prejudicial hereafter in the performance of its functions; besides this, the skin covering the glands becomes too suddenly diminished in extent of surface, and thus produces wrinkles around the

gland; they therefore have not that degree of support they were previously accustomed to, and have hereafter a tendency to hang down, and whenever in their natural situation, the skin around the gland is corrugated and wrinkled, and this is to a greater degree the larger the breasts are at the time of weaning. Now, by paying a little attention at the period of weaning, this may be prevented, and the form of the breasts be still preserved, their propensity to hang down obviated, and also the corrugated state of the skin. A too sudden suppression of the milk under several circumstances endangers fever, internal inflammation, phrenitis, &c., and these consequences are more likely to take place when the functions of the breasts are fully established. The best mode of preventing any bad results will be the exhibition of saline aperients, a low and cooling diet, and the avoidance of all unnecessary fluids; a drachm or a drachm and a half of sulphate of magnesia in one ounce and a half of compound infusion of roses, with fifteen drops of diluted sulphuric acid, taken three times a day, will answer the purpose beneficially. Should the breasts become hard and painful, stimulating liniments

will relieve these symptoms, or a little of the milk may be drawn off. The breasts may be rubbed with warm camphorated oil ; or a lotion be applied, composed of hydrochlorate of ammonia, dissolved in spirits of wine ; this should be applied cold, or the bottle, being uncorked, may be allowed to stand in some warm water ; linen rags should be wetted in the lotion and applied over the tender and hardened parts, or all over the breasts.

Weaning, if not attended to under certain circumstances, may produce the development of some specific disease, in constitutions predisposed.

By strict attention to the bowels acting freely, aperients given frequently, loss of health, disorders of the digestive organs, depression of spirits, and also other bad consequences will be prevented. Gradually withdrawing the infant from the breast, feeding it previously to completely weaning, so as gradually to accustom the infantile stomach to digest the food, will very considerably favour the suppression of milk. When active purgatives have been given, a large quantity of milk-like fluid may occasionally be observed in the motions ; and there are cases on record where a great deal of fluid of this character has been

discharged from the intestinal canal, without inconvenience to the mother. The more gradual the breasts are allowed to diminish the secretion of the milk, the more natural will the glands remain, and the smoother the skin covering them, and they will be better able to perform their function again, when nature requires their assistance.

Dr. Ranque, of Orleans, to suppress the secretion of milk recommended the following powerful sedative application to the breasts, with a low diet.

Take of laurel-water and sulphuric ether, of each two ounces, extract of belladonna two scruples—mix. A folded cloth moistened with this lotion to be applied to the breasts. The effect of this application may be too speedy in suppressing the secretion, and therefore requires to be carefully watched.

“The celebrated Prussian physician, Dr. Hufeland, has published the following case of the death of an infant, which the medical attendants attributed to an unhealthy secretion of the milk, occasioned by the mind. In April, 1821, a person at Munster quarrelled with a soldier, who lodged in his house : the latter drew his sword,

“ and attacked his host, whose wife, terrified at
“ the danger of her husband, attacked his adver-
“ sary, forced the weapon from his hand, and
“ threw it aside. By this time several people ar-
“ rived, and the combatants were separated. The
“ woman then, being greatly agitated by the oc-
“ currence, took her infant, who was quite well,
“ out of the cradle, and applied it to the breast.
“ The child quitted the nipple with marks of in-
“ quietude, sighed, and remained lifeless in the
“ mother’s arms! The advice of Dr. Tourtual of
“ Munster was immediately taken, who adminis-
“ tered all the assistance in his power, without
“ avail.” The influence of the mind on the milk
of nurses has long been known. “ The passions
“ of mothers,” says Dr. Hufeland, “ are unfavour-
“ able to their infants, who are almost always
“ affected under such circumstances with restless-
“ ness, colic, diarrhœa, vomiting, &c ; but we are
“ not,” added the Doctor, “ aware of any case
“ similar to the present, in which the milk would
“ seem to have acted as a quick and powerful
“ poison.”*

INFLAMMATION OF THE BREASTS.—Inflam-
mation of the breasts may be either of an

* Gazettee of Health, Vol. VIII. page 677. Oct., 1823.

acute or chronic form, or at its commencement the inflammatory action may be high, and gradually pass into a chronic state; the seat of the inflammation may be either in the glandular structure of the organ, extending to the lactiferous ducts, or in the fibrous texture connecting the lobes, composing the breasts, or the whole of the structures may be equally affected with the inflammatory excitement. The breast, like all other parts of the frame, is liable to inflammation at all times, but more frequently during lactation, for at that period there is a greater flow of blood to the organ, for the performance of its healthy function; but at any other time, any external violence, or exciting cause, may produce inflammation of the breast: a blow, or a fall against the gland, or any bone in the stay constantly irritating the skin, will produce either acute or chronic inflammation, which will be more serious, according to the state of the gland when such violence occurs; for example, prior to the catamenia, when the glands are in a state of irritability, accidental causes producing inflammation will become more serious, as the violence may cause the catamenial discharge to cease, or even not to take place, when the mischief will be

more severe than at other periods, the action running to a higher degree. The inflammation may be either phlegmonous, erysipelatous, or a combination of the two, and the treatment of course must depend upon the extent of the increased action, as well as its nature. When the attack is of a chronic form, or sinks from an acute state to a slow action, chronic abscess frequently takes place, the seat of the abscess being sometimes beneath the gland, upon the pectoral muscle, in which case some difficulty may be experienced in detecting the precise nature of the malady at an early period: when phlegmonous erysipelas attacks this gland, it often ends in gangrene, and there are instances on record where the whole of the gland has sloughed away, and in other cases where it has terminated in medullary sarcoma. At the termination of the inflammation, great caution should be taken that the gland be restored to its normal size, and be free from any peculiar swelling, and that no coagulable lymph be left to impair the future functions of the gland, as there may be danger of such remnants obstructing the healthy action of the gland, or forming the foundation of some future mischief.

Inflammation of the breast frequently occurs after delivery, owing to the termination of blood to the organ, for the performance of its healthy function—the secretion of milk. It may arise at any time during lactation, but more frequently within the first month, extending even for some time afterwards. The inflammation may either be confined to one spot, or extend over a greater portion of the gland, or both glands may be attacked simultaneously. However confined the inflammation may be at the commencement, it generally spreads rapidly, and involves a greater portion of the organ. There exists a very general tendency to the formation of matter, which frequently collects to a considerable quantity, producing small sloughs of the adjacent cellular tissue, attended with much pain, want of rest, and anxiety of mind.

All women are liable to inflammation of the breast, but it more frequently attacks those of a weakly, delicate, and scrofulous constitution. It commences by an uneasy sensation in the breast, which soon amounts to an acute pain of a shooting kind, followed by rigors, attended with considerable fever: the pain is much increased by pressure, even ever so gently applied.

A circumscribed hard swelling may be felt before any redness appears on the surface. After a time the tumour becomes more diffused, red, and somewhat œdematous; frequently the breast has a knotted feel, the inflammatory action commencing in more than one situation, which ultimately unites, until the whole gland participates generally in the increased action. There is a considerable tendency to the inflammation terminating in the formation of matter, and there is a difference of opinion respecting the treatment. Some practitioners, most eminent in their practical knowledge, recommend an early evacuation of the pus, when once formed; but my experience in these cases has fully convinced me that it is much better to endeavour to produce absorption of the collection, which can be done in very many instances, than open the abscess, which may then continue to discharge for a very considerable time, and injure the health of the patient; for under the suppurative form the body has been known to dwindle almost to a shadow. In some instances the patient has been worn out by the debility produced; and in others, the seeds of organic disease, which, until that period had lain within the

system dormant and inert, have been called forth into development and activity, rapidly destroying the life of the unhappy sufferer. Many cases have come under my notice where suppuration has been fully formed, and where it has appeared almost a miracle to prevent the breasts bursting spontaneously; but where judicious applications have been applied, producing absorption of the whole collection, the inflammation has disappeared in the course of a very short time, and the patient restored to health. There cannot be, in my mind, any mischief done by endeavouring to prevent suppuration or dispersing it when once formed; and where there is every chance of accomplishing this desirable end it is far better to prevent an evil than remove it when once established. These remarks are only applicable when the suppuration has not been formed to any very great extent.

The uneasy sensation experienced at the commencement of inflammation of the breast is the sensible manifestation of the primary change in the organic nerves of the parts, caused by turgescence of the capillary vessels, which amounts afterwards to actual pain, by the consequent increased influx of blood, and by the excessive expansion and

tension taking place in the parts, which may be followed by pricking, throbbing, burning, or gnawing pain, extending to the arm-pits, over the collar-bones, and down the arms as far or even lower than the elbow-joints; increased heats, redness, and swelling attend this stage of the inflammation. These symptoms are considerably augmented by the blood constantly flowing to the breasts for the purpose of secreting the milk. Febrile symptoms frequently attend this complaint, and will in most instances depend upon the nature of the inflammation and its extent. We here only treat of inflammation of the breasts as an inflammatory action; when it terminates in abscess, the observations under the head of milk-abscess are applicable.

TERMINATION AND CONSEQUENCES. — Inflammation of the breasts may terminate in resolution or the recovery of the healthy action of the organ; in suppuration or the formation of abscess, and rarely in gangrene, in the form of small irregular sloughs. In resolution the symptoms subside nearly in the same order in which they appear. Pain ceases, heat and redness diminish, the swelling subsides gradually, and the function of the gland is duly performed as in a state

of health, with little or no inconvenience; and this is the most favourable termination to be looked forward to, as the patient feels little, even if any effects of the inflammatory action having been once established; and every means should be employed for the purpose of bringing about such a desirable removal of the increased action and cure.

Inflammation terminates in suppuration, according to the modern theory, “by the matter “being separated from the blood by the secret- “ing power of the vessels of the inflamed part, “which acquire a new mode of action.”*

“Serum and coagulable lymph are effused in “the areolæ of the tissue, and if the inflamma- “tion is very intense, the excreted fluid is more “or less coloured by the exudation of red “globules or of blood. The whole of the in- “flamed part is quite opaque. As soon as sup- “puration commences, the red colour begins to “disappear in various points, giving place to a “yellowish glandular-like matter in the capil- “laries and connecting cellular tissue. In the “centre of the inflamed tissue several of the

* Cooper's Dictionary, p. 1051.

“ capillary vessels, which were obscured by the
“ accumulated blood, re-appear, some containing
“ red, others yellowish grey globules, which gra-
“ dually become more distinct, increase in num-
“ ber and size, begin to move slowly and
“ traversing the capillaries, arrive at the surface
“ of the tissue, in the form of globules of pus.”*
(*Carswell*.) The suppurative process continues
until an abscess becomes fully formed.

ABSCCESS.—Dr. Ramsbotham says, in his Lec-
tures: “ I have known pus quickly produced in
“ the substance of each mamma at the same
“ time, and burrowing underneath the skin and
“ above the sternal bones, form a connexion be-
“ tween the two breasts, so that both the organs
“ communicated by means of one cyst. On
“ another occasion I was sent for to see a wo-
“ man, on the third or fourth day after delivery,
“ in a state of the most furious delirium that
“ can be conceived, which had come on rather
“ suddenly : she appeared labouring under acute
“ phrenitis, and in the most urgent danger. A
“ copious bleeding seemed absolutely indicated;
“ but on examining the breasts (as is my cus-

* Copland's Dictionary, (article Inflammation,) p. 376.

“tom in all puerperal diseases) I found them
“both very large and tense, and the surface
“red; fluctuation was distinguishable in each;
“it was evident they had suppurated, and pro-
“bable that the violent symptoms depended
“upon their condition. They were both freely
“opened, and in less than an hour the patient
“had recovered her reason.”*

The treatment of inflammation of the breasts is the same as the treatment of increased action of other parts of the body, and must be regulated by the medical practitioner, according to the symptoms that present themselves at the time.

Inflammation of the breasts may take place at any period of life, and when the function of lactation be not present, such inflammatory action, under certain circumstances, may terminate in the formation of one or more abscesses. The inflammation may be the result of some accidental violence, such as a fall, a blow, or some local cause exciting irritation. The primary treatment ought to be regulated by the cause producing the increased action, and the

* Dr. Ramsbotham's Lectures, *London Medical Gazette*, p. 33. April 11, 1835. Vol. XVI.

medical attendant should direct such means as to induce the inflammatory action to terminate in resolution ; but should pus be once formed, means should be used to promote a termination of the complaint by suppuration as speedily as possible, thus assisting nature to our utmost to accomplish a cure.

CASE.

E—— T——, aged twenty-one, a healthy-looking girl, consulted me, April 17th, 1843, on account of a swelling at the upper part of the right breast. She stated that about three months since she had inflammation of the right side, below the breast, and at that time the swelling first made its appearance, gradually increasing. It was a circumscribed tumour, nearly three inches in diameter, situated about an inch below the clavicle, extending beneath the upper border of the right mammary gland towards the nipple. It was hard and elastic, giving to the feel a sense of fluctuation, and an idea of flatness at the surface next the pectoral muscle. She never had any shivering after the inflammation of the side ; she found the swelling very painful, particularly after using the arm : after sweeping the

room the pain was very severe ; it darted from the centre of the swelling right through the shoulder to the shoulder-blade. She has had leeches applied to it, but they did not diminish either the size or the pain in the swelling. Lotions have also been used ; a small portion of the following ointment was ordered to be rubbed over the surface of the swelling every night previously to her going to bed, with a view to disperse it. Iodide of potassium, fifteen grains ; Iodine, ten grains ; simple cerate, one ounce ; to be well mixed. She was also ordered aperient medicines.

21st. She had used the ointment every day, but found the swelling increase. It had been very painful, particularly when she held the arm down, or moved it much. The shape of the swelling had altered ; it was now more pyramidal, or rather oval, and extended more towards the breast. The sense of fluctuation was greater, but the collection would seem to be deep-seated beneath the pectoral muscle. She did not recollect having injured it in any way, either by a blow or any other accident, nor did she recollect having felt any pain by the pressure of the stays irritating the breast ; in fact, it was too high for this to have taken place.

She was ordered to discontinue the ointment, and apply a poultice made with the following anodyne lotion :—Solution of diacetate of lead, thirty drops ; camphor mixture, eight ounces ; tincture of opium, three drachms, to be well mixed ; and the pulse being weak, to take one pill night and morning, composed of two grains of disulphate of quinine, and three grains of extract of gentian.

Three days afterwards the abscess broke and discharged about two ounces of healthy pus. It continued to discharge for a few days, when it gradually diminished, and in a week's time this patient was quite cured ; no swelling or hardness of any part of the gland remained. Since this case another has come under my consideration almost similar in every respect, and which terminated as favourably.

After the inflammation has subsided, the gland should be very carefully examined, and should any thickening be present the greatest care should be taken, in order to subdue the thickened portion, and restore the gland to its normal condition, or otherwise it may be prevented performing its functions, and responding to the peculiar changes which the uterus undergoes

at each catamenial period ; and this impediment to the performance of its healthy function may produce chronic inflammation, which sooner or later may terminate in some accidental deposit forming other diseases.

For the purpose of reducing any induration that may remain, iodine and its preparations may be administered internally, also steel and other tonic medicines ; the swelling may be painted with tincture of iodine until the skin is sufficiently sore. Iodine ointment, iodide of potassium, in the form of an ointment or lotion, may be useful ; also the ointment of iodide of mercury ; and Lizar advises the breasts to be fumigated with mercury and camphor, and describes the method of doing so.*

MILK-ABSCCESS.—Milk abscesses are troublesome, and often very tedious complaints ; they generally come on during the period of lactation, and are the consequence of milk remaining in the lactiferous ducts, forming an obstruction to the flow of milk to the nipple, attended with pain and inflammation ; they are produced in the following manner :—In one or more

* Lizar's Practical Surgery, p. 11.

of the lactiferous ducts, the milk becomes coagulated, and thus closes up the canal. The fresh milk, as it is secreted by the mammary gland, advances by its natural impulse, and is stopped by the closed vessel, which causes it also to become coagulated, and in this manner the obstruction increases. The coagulated milk, by closing the lactiferous ducts, produces inflammation, and the surrounding vascular structure assumes a congested state. The breast becomes tender to the touch, feels knotty, is spotted, and the patient suffers a considerable degree of uneasiness in the affected side. She feels disinclined to allow the infant to suckle from that breast, particularly as it gives her much pain, and she fancies that the milk cannot be so good for her child. She therefore puts the infant to the other breast, which, of course, increases the complaint, for the mischief goes on by the increase of coagulated milk, until the inflammatory action terminates in suppuration, completing the formation of one or more milk-abscesses. Fluctuation is then to be discovered in the part where the matter has been formed, which either breaks, or it becomes requisite to make an opening for the escape of the discharge. These abscesses

after they have either broken or have been opened, become extremely tedious in their treatment, for months often pass on and still the wound discharges, remains open, and is a very troublesome and disagreeable complaint to the patient, the constitution suffering by the continued discharge, and often the patient becomes emaciated, and very frequently is obliged to wean the infant ; thus then both the mother and the child are the sufferers from the malady. These are only a few of the evils that may result from milk-abscess, for when the abscess has been cured, as it is often termed, that part of the breast becomes hard and condensed ; it becomes changed in its glandular structure, and no longer capable of performing its natural function : at first it appears well, and continues so until the gland is again called into action ; then the patient suffers again by fresh inflammation, and perhaps the formation of fresh abscesses ; frequently being obliged to send her infant from her to the care of others, on account of her inability to bear the pain and the uneasiness accompanying the suckling of her child. Should she have several children she will suffer in that breast after every confinement, and what

appeared a trifle at first will become an everlasting and wearisome annoyance, for it will not terminate here ; for even after she has ceased to have any family, it will plague her, and even at a later period of life, when she has ceased to think of her early suffering, and is gradually advancing at the climax of old age, she may feel uneasy sensations in the breast, which by increasing become the cause of her dissolution. A case of this kind came under my notice : a lady consulted me, sixty-four years of age, with an enlargement of the right breast, which was considerably inflamed, and very painful when any pressure was applied. She complained that she could not bear anything to press upon it, and suffered night and day the most excruciating pain. She had had cold chills and shiverings. Upon examining the breast there was a cicatrix below the nipple, and I requested to be informed what caused it ; she stated that after her first child she had milk-abscess, which was opened twice ; that she had suffered much from that breast after each of her confinements ; but she had persisted in nursing all her children, and had succeeded in bringing up a large family. The swelling increased in her breast, and it became

necessary to open it, which was done, and we found a very deep-seated abscess sinking beneath the mammary gland. The discharge was very profuse, and the lady died (from the constitution being unable to support such a drain,) about six weeks after.

This is one of the consequences that may result from milk-abscess, but supposing that some predisposition to disease lurks in the system, it may be the exciting cause to the appearance of the disease, and thus scirrhus cancer, medullary sarcoma, &c., will sometimes follow the termination of milk-abscess, and the appearance of either of these malignant diseases may be either at an early or a later period after the termination of the abscess. The following case will exemplify this remark, but it must be mentioned that such a termination of milk-abscess is by no means common :—

A young woman was admitted into the Middlesex Hospital, twenty-three years of age, with milk-abscesses in both breasts: she had been just confined. There was considerable swelling around each breast, and several abscesses had formed, which had broken and discharged con-

siderably. These abscesses healed, and the discharge ceased, when the glandular structure of both of the breasts became enlarged and extremely hard; the glands in each axilla became painful and knotty, and she suffered from excruciating lancinating pains in each breast, running to the arm-pits. The tumours became fixed to the pectoral muscles, and most of the axillary glands partook of the disease. Each breast was one hard, fixed, knotty body of malignant disease. Opium and all sedative medicines had but little effect in allaying the pain which she suffered, and she left the hospital, as no remedy relieved her disease, or produced any ease. At this period I was not aware of the effect of the chloride of carbon, for no doubt that preparation would have given relief.

The common causes of milk-abscess are exposure to cold, moving the arms too much while the breasts are large and distended, external violence, blows or bruises, repressing the milk at an early period, fright, mental disturbance, a cachectic or scrofulous habit, or morbid state of the uterus. Sir Astley Cooper was of opinion " That the principal cause of suppuration of the " breast is the rush of blood which takes place

“ each time the child is applied to the bosom,
“ and which by nurses is called the draught,
“ and is the preparatory step to the secretion of
“ milk. He adverted to the frequent exposure
“ of the bosom in suckling, and the active ex-
“ ertion of the child in suckling, as promoting the
“ origin of the complaint. The nurse, he said,
“ often produces these abscesses immediately
“ after the lying-in, by not putting the child
“ soon enough to the breast, and by giving the
“ mother strong drink,”* Women are more
liable to milk-abscess within the first month
after delivery; but they are exposed to the
disorder as long as they continue to suckle, and
even at the termination of lactation.

The first object in the treatment of milk-abscess is to procure resolution; and bleeding or the application of leeches may be requisite, with the exhibition of tartarized antimony in small and frequent doses, purgatives of a saline kind, or containing mineral acids, diaphoretics and diuretics. To diminish vascular determination to the breasts, no means are more useful than purging with saline medicines, and giving antimonials

* Illustrations of the Diseases of the Breasts, p. 8.

to produce slight and continued nausea ;—or solution of acetate of ammonia with camphor julep, nitrate of potash, and sweet spirits of nitre ; and to allay pain, opium, morphia, &c.

Milk-abscess may terminate either in resolution or a removal of all inconvenience, or in producing one or more abscesses ; and may likewise be acute or chronic, according to the nature of the inflammation set up ; thus, then, it may terminate speedily or continue some time. The most favourable termination of this complaint is by resolution, and it must be for the benefit of the patient and the credit of the practitioner to use the best means to prevent the formation of an abscess, or, if formed, to endeavour to disperse it, which, if accomplished, must necessarily prevent any bad consequences following. Let us now enter upon the treatment of this painful affection, and the means recommended for its removal.

It is essential, during the treatment of milk-abscess, that the breast should be properly supported, and it should never be allowed to hang down, even for ever so short a period : keeping the arm on the affected side perfectly free from motion will be of much service. For

this purpose it may be fastened to the side, and the arm bent, so that the fore-arm may come just below the affected breast, which will serve to a certain extent to support the breast. Bleeding generally has been recommended in these cases, as also the application of leeches to the breast. When acute inflammation of the breasts precedes milk-abscess, either of these remedies may be requisite. The application of leeches is frequently very beneficial. Sir Astley Cooper observed, that the inflammation attending these cases is adhesive in the first stage; suppurative in the second; and ulcerative in the third. This observation should be remembered, as the treatment of course will vary according to the stage the complaint assumes at the time.

If the abscess be small, Sir Astley Cooper allowed the child to suck the affected breast as well as the other; but if much of the mamma be involved in the complaint, he allowed the infant to suck the other breast, and the mother to draw the other herself with a glass tube, constructed for that purpose.

Sometimes when the swelling is opened a considerable quantity of milk will be discharged, in which case Sir Astley Cooper recommended a

sponge tent to be introduced into the puncture, by which means the adhesive inflammation and obliteration of the cavity will be produced.* The sponge by its equal pressure will be extremely useful in obliterating the cavity equally, and in many cases a cure will be effected without any induration remaining ; but should any hardness afterwards be left, friction will be of service, with camphorated mercurial ointment, the iodine ointment, or an ounce of soap-liniment to one drachm of tincture of iodine ; and, internally, a compound calomel pill, with proper aperients when requisite.

When suppuration takes place, and the discharge is very considerable, accompanied with great pain and considerable weakness, disulphate of quinine, bark, preparations of steel, and good, wholesome, nourishing diet will be required, with opiates to allay the pain, and induce sleep at night.

The common and prevailing application to a milk-abscess is but too generally known to most women who have large families. The application of large warm poultices to the breast, keep-

* Lancet, Vol. II., p. 406.

ing as much warmth to the gland as possible, is but too often prescribed; let us look to the effect. The breast being surrounded by the warm poultice, a greater quantity of blood must be drawn to the gland and adjacent part, which must of course tend to increase the abscess, and bring it to a head: thus, instead of making an attempt to prevent the formation of an abscess, the common practice is to encourage it; and even after it has fairly formed, the warm poultices are still recommended to be applied, which have the same effect of determining more blood to the part. Thus the best means are had recourse to for allowing the complaint to be completely established, instead of stopping its course. I was in attendance upon a gentleman in the country, with a medical practitioner of considerable scientific attainments, and the conversation turned upon the old and general treatment of milk-abscesses. He stated that he had watched the plan with considerable attention, and he had come to the conclusion that it was the worst treatment that could be recommended in such complaints. So convinced was he of the disadvantage of the use of warm poultices that, at a consultation he had with a surgeon in

London upon a case of many months' standing, that upon the recommendation of warm poultices to be continued, he pointed out the uselessness of the application, and strongly urged some other plan, which he succeeded in ; when the patient rapidly recovered, although she had suffered for many months before. An endeavour ought to be made to disperse these abscesses, the same as the treatment of any other complaint. Let us then examine into the best means of accomplishing this most desirable end. Leeches have been used, and occasionally with some little benefit, and they must necessarily tend to unload the congested blood-vessels ; but still the cause—the coagulated milk—remains in the lactiferous ducts. How is this to be got rid of ? drawing the breast, or letting the child suck from that breast is of use ; or a common practice is to get another child to draw the breast : but taking the milk away will not tend to prevent the formation of an abscess. Studying an old surgical work some years ago, my attention was directed to the following observations from Justerman :—“Sal ammoniac, (hydrochlorate of ammonia), when in solution, has a peculiar property, that of dissolving coagulated

“milk and coagulating blood.” This, then, is precisely what we require, for if we dissolve the coagulated milk, we remove the obstruction, and if we cause the blood to become coagulated we prevent a too great secretion taking place. Justerman strongly recommends its use in such cases, and at that time it appeared to me a most valuable and useful remedy, and one that should be more generally known. It may be stated that after following up the use of this remedy for nearly twenty years, that it was never found to fail, when properly applied, even under very unfavourable circumstances, for in numerous cases where abscesses had already been formed they have disappeared by the use of a lotion made of spirits of wine and hydrochlorate of ammonia. An out-patient presented herself at the Middlesex Hospital, under the care of Sir Charles Bell, during the time of my holding the office of assistant-surgeon. The breast was very considerably enlarged, and fluctuation could be felt to a great extent, which almost induced a surgeon to open it. I was requested to write for my form of lotion, which was done with little expectation of its being of the least service. Two drachms and a half of hydrochlorate of

ammonia dissolved in six ounces of spirits of wine was ordered as a lotion. This was applied in the following manner:—a piece of lint was wetted with this solution, the bottle containing it having been previously allowed to remain in warm water, so that it might be used a little warm; a piece of oiled silk was ordered to be placed over the lint which was applied upon the whole of the enlarged breast, and which was to be replaced when dry, so as to keep the lint constantly wet. She was ordered to take an ounce and a half of compound infusion of roses, and one drachm of sulphate of magnesia three times a-day. This patient returned to the hospital in four days with the breast decreased to half its previous size, and in ten days she was quite cured, without any abscess or discharge from the breast, excepting the natural secretion of milk. Many cases could be detailed which would prove the beneficial effects of this application in the removal of this complaint. The form in which this lotion has been prescribed in private practice, is—two drachms and a half of hydrochlorate of ammonia, to seven ounces of spirits of rosemary, or the same quantity of simple spirit may be employed.

This lotion may be used cold with perfect safety ; or should the patient fear to apply it cold, a small quantity may be warmed, and the warmth may be gradually diminished until it can be borne cold. A few days will show the effect of the lotion. If it should be too stimulating, it may be used less frequently, or may be diluted with more spirit or with some little water. Aperients should be administered, and we are induced to believe sulphate of magnesia with compound infusion of roses, given three times a-day, is as good an aperient as can be prescribed.

CASE.

M—— G——, aged twenty-four, admitted as an out-patient at the Middlesex Hospital, under my care, October 1, 1842, with considerable enlargement and induration of the right breast. She stated that seven weeks since she was confined with her first child ; that a week afterwards her breast began to swell and feel uneasy ; she then procured a glass, and drew the milk from it daily ; but notwithstanding it increased in size and hardness. Three weeks before she came to the hospital she began to

foment the breast with decoction of poppies, and to apply a warm linseed-meal poultice to it every night, also to take aperient medicines. This plan she had regularly continued, but finding it still increase in size, she, upon the recommendation of one of her friends, procured a letter to be under my care. Upon examining the breast it was extremely hard and irregular, particularly at the upper and outer part near the axilla. The hardness extended over the whole glandular structure of the breast. It was capable of being freely moved over the pectoral muscle. Its size was very considerable. She complained of little or no tenderness whilst or immediately after it was handled. She was directed to apply the following lotion to it, cold, by wetting some linen in it, and placing the wet rag over the whole of the breast, and applying over the rag a piece of oiled silk. She was also recommended to take the medicine prescribed regularly, and to be at the hospital on the following Monday, two days afterwards. The lotion to be made of half an ounce of hydrochlorate of ammonia to five ounces of spirits of wine and five ounces of solution of acetate of ammonia. A draught to be taken three times a day, composed of

compound infusion of roses one ounce and a half, to a drachm and a half of sulphate of magnesia.

Oct. 3.—The breast had diminished slightly. It is softer at the inner and upper part, but remains very hard at the lower and outer portion. The mixture had not acted upon the bowels. She was ordered to take a dose of castor-oil, and to continue the mixture and application of the lotion.

Oct. 5.—There is more improvement in the breast. It is softer and in the same situation as before, but the hardness is about the same at the other parts. The bowels had not acted. To take another dose of castor oil. Repeat the mixture and lotion.

Oct. 8.—The breast is much softer : the outer part has diminished in size and hardness, and its whole extent has very much decreased. The mixture had not acted upon the bowels, but the child was much purged. Discontinue the mixture, and to take a compound colocynth pill every night. The lotion to be continued. She does not find the least inconvenience by the cold application.

Oct. 10.—The breast had improved very con-

siderably. It had become softer, and yielding upon the application of pressure. The outer part has also improved; still a degree of hardness remains; but upon the whole it cannot be going on more favourably. Continue the treatment as before.

Oct. 15.—The breast had improved since her last visit. The lotion had made the skin a little sore, and caused a little irritation. It was ordered to be discontinued, and the solution of diacetate of lead and opium to be applied;—the pill to be continued.

Oct. 18.—Going on favourably.

Oct. 29.—The breast had remained much in the same state as when it was last examined. The skin had recovered from its tenderness. The lotion composed of the hydrochloride of ammonia was ordered to be again applied. The pill to be continued.

Nov. 12.—The breast had become of its former size and shape. A little hardness on the outer part; but in other respects she is quite recovered. The ointment of iodine and mercury to be applied daily over the indurated part.

Nov. 28.—This patient called to-day to return thanks for what we had done for her. She was quite well. The hardness had completely

disappeared, and the breast was in every respect the same as the other.

Numerous other cases might be added, to point out the use of the lotion of the hydrochlorate of ammonia; but it is presumed that sufficient has been said on this subject to induce practitioners to use it under the conditions of the breast already mentioned. We are fully aware that the lotion of hydrochlorate of ammonia has been recommended before by authors, but we think not of the strength that we have been in the habit of recommending it for these affections of the breasts.

LACTEAL TUMOURS.—These tumours may be divided into two kinds, those occurring in the breasts of women shortly after confinement, producing no inconvenience from pain or inflammation, but considerable swelling, with a distinct sense of fluctuation, occasioned by a quantity of milk contained in a sacculated state of the lactiferous ducts; and those occurring at a more distant period of lactation, or in some females where the gland has never been called into action. The latter are of a much smaller size, seldom becoming larger than a walnut; are oval, fluctuating swellings, situated near the

nipple, free from discoloration and pain, arising from some chronic action in one of the lactiferous ducts near the nipple, producing its obliteration, and a collection of fluid behind the obstructed vessel. The fluid contained in it is serous, and more or less of a dirty colour, particularly if it occurs in the female when the gland has not been called into action. The first kind of these tumours differ from milk-abscess in the absence of inflammation and pain; being only a collection of milk, with the inability of its removal, on account of the obstructed lactiferous duct. The nature of these swellings and the knowledge of their formation is sufficient almost to point out the treatment. It is almost impossible to remove the obstruction in the duct, and therefore it becomes necessary to let out the collection with a lancet, regulating the extent of the incision according to the size of the tumour; and after the contents have been evacuated to introduce a soft piece of sponge, to excite inflammation in the sides of the sac. Adhesive matter will be thrown out, when the sponge should be withdrawn, and the walls of the sac will be agglutinated and terminate in a total obliteration of the cavity,

thus causing a permanent cure. This plan was recommended by the late Sir Astley Cooper, and is the best mode of treatment for the cure of these tumours.

THE NIPPLES.—The nipples are usually two in number, one on each breast, surrounded by the areola. They vary in form and size in different subjects, being either cylindrical or conical, and are sometimes so short that the lips of the infant cannot lay hold of them, and in certain cases they are depressed in the structure of the breast, more particularly so during lactation; but even at other periods, Sometimes there is one or more additional nipples, which we shall first point out before entering upon the diseases peculiar to this portion of the breast.

SUPERNUMERARY NIPPLES.—The human female presents irregularities of the breasts not less frequently than other mammalia. One or more additional nipples may be present, and there are a variety of cases on record illustrating this fact. “In the year 1824 Maria R——, born “in Hagenfield, near Pforzheim, was admitted “into our Lying-in Hospital. Her left breast “was furnished with two nipples, each of which

“ was enclosed within a separate areola. The
“ supernumerary nipple was situated about three
“ fingers’ breadth beneath the other. This
“ breast on the whole was not larger than that
“ of the right side. She had a child, and milk
“ came in as great abundance from the super-
“ numerary as from the other nipples. In
“ the year 1825 the body of a girl was brought
“ into our dissecting-room ; she was about twenty
“ years old. Her breasts were beautifully
“ formed and well developed ; but each furnished
“ with two fully-formed nipples, surrounded by
“ a common areola. In 1829, the wife of a
“ Dutch soldier, named Walter, called for the
“ purpose of consulting me, and during the
“ examination of her chest, I observed that the
“ left breast was provided with two nipples, each
“ of which gave milk, and were surrounded with
“ a common areola. She assured me that her
“ mother had exactly the same conformation.”*

One or more additional nipples may exist, and the female be unconscious of the circumstance ; and sometimes the discovery is only made when the gland is called into action to perform its function, being made apparent by the milk flowing

* Tiedemann, in *Leitshrift für Physiologie*.

through the extra nipple, and wetting the linen. Sometimes there are prominences resembling an extra nipple, without any ducts flowing through them, being destitute of an areola, which are merely prolongations of the skin, containing some little adipose tissue.

DISEASES OF THE NIPPLE.—Women have the nipples of different sizes at different ages, and in dissimilar constitutions and conditions. At puberty they begin to increase, and frequently, from tight stays pressing against them, they become flat or drawn in, owing to the increase in the size of the whole breast, and adhesion taking place of the convoluted tubes entering into their structure, which afterwards occasions a very serious inconvenience. In pregnant women they become pretty large, and generally longer and higher than they are thick and broad. The body of the nipple is composed of erectile tissue, containing the termination of the lactiferous ducts. These ducts are extremely convoluted, which convolutions act as valves, for when the nipple is drawn out they become straight; the breast also is equally elongated, and its convoluted vessels likewise become straight, so that the milk flows freely; and when the nipple is allowed to contract again

the convolutions are resumed, and the milk retained. In those females who have the convolutions adherent, the nipple is prevented from being drawn out, and the flow of milk thus becomes obstructed. The body of the nipple is covered by a thin cutaneous production, which is uneven on its outer surface, having a number of small tubercles and wrinkles; those towards the circumference of the nipple seem to have an annular disposition, but very irregular. It is from these elastic folds that the milk is retained, and it is easy to understand how infants in sucking the nipple draw out the milk, for the excretory tubes being wrinkled in the same manner as the tubercles, do by these wrinkles or folds, act as so many valves, which hinder the milk contained in the ducts from flowing out; but when the nipple is drawn and elongated, the tubes lose their folds, and the passage becomes straight. When drawn with considerable force the whole body of the breast is increased in length and contracted in breadth, and thereby the milk is passed into the other tubes; and then, by barely pressing the body of the breasts, the milk will be forced towards the nipple and through the tubes. In some in-

stances the nipples are so flat and sunk into the body of the breast as to render it difficult for the child to lay hold of them ; in which case the mother may sometimes give assistance by pressing back the prominent parts of the breast, so as to make the nipple project between two of her fingers. If this be ineffectual, a strong, healthy child applied to the breast may cause the nipple to appear ; but when this cannot be done, breast-glasses may answer the same purpose ; by applying them to the nipple, and sucking out the air the child will commonly be enabled to lay hold of the nipple.

The nipples are exposed to the different maladies which affect other parts of a similar texture.

INFLAMMATION AND EXCORIATION OF THE NIPPLE.—This is a most distressing and painful affection to the mother. It makes its appearance two or three days after the application of the infant to the breast, and may extend over any time of lactation. It is more common with the first child than after subsequent confinements. The nipple and areola are at first dry, hard, red, and rough, then excoriate, becoming humid and granulated, then fissures or cracks

appear at the base of the nipple, attended with excruciating pain when the child is placed at the breast, so much so as to make the mother cry out or scream with agony. A serous discharge flows from the excoriation, which tends to increase the inflammation to the surrounding skin. Several deep fissures occasionally are found in the nipple, which become ulcerated, and in severe cases so extensive as partly or nearly to destroy the structure of the nipple itself. Suckling causes the sores to bleed, and sometimes the pain is so great as to throw the mother almost into fits. The milk accumulating, the breasts become hard, knotted, and tender; general inflammation of the gland takes place, and abscess may follow. Inflammation of the nipple will frequently cause (when it takes place on one side only) the mother to place the infant at the opposite side, so great is the pain; and when both nipples are affected, the child is frequently obliged to be entrusted to a wet-nurse, or should it occur at a later period, it is obliged to be weaned. The inflammation may commence in the nipple itself, or in the areola. In the anatomical description of this portion of the breast it has been pointed

out that there are numerous sebaceous follicles placed here for the purpose of protecting the nipple from friction and the saliva of the infant. The secretion from these follicles being destroyed, by the infant being placed too frequently to the breast, or by rubbing or wiping the nipple and areola, so as to remove the sebaceous secretion, will cause inflammation to arise. The state of the infant's mouth, tongue, gums, and lips, aphthæ existing on these parts, will produce this affection of the nipple, but it should be remembered that inflammation of the nipple will cause the child's mouth to become sore. The constitutional mode of living of the mother may produce the inflammation; irritating and exciting articles of diet, heating beverages, spiritous liquors, wine, and inflammatory irritation of any kind will favour the appearance of sore nipples. When the mother is enabled to continue her charge of the infant, and the soreness has only partially subsided, or even when it first appears, the pain is very great when the child first takes hold of the nipple and capriciously drops it. When the inflammation exists independent of any soreness in the child's mouth, it may arise from the unusual irritation

of the new stimulus. Ulceration of the nipple and areola, when neglected, will sometimes extend deep into the adjacent structure, and Dr. Rambotham states, in his Lectures, that, “ Sometimes
 “ these excoriations are very superficial ; at others
 “ they eat more deeply into the substance ; and I
 “ have seen the whole structure of the nipple
 “ and part of the areola destroyed by a disease
 “ which commenced as a simple chap. Such
 “ inveterate cases, however, almost always de-
 “ pend on neglect or mismanagement.”

TREATMENT.—In order to prevent this affection, Sir Astley Cooper suggested washing the nipple, some time before lying-in, with strong brine, in order to harden the cuticle, and render it less prone to crack. Dr. Churchill advises the nipples to be washed with soap and water, and dried, and afterwards bathed with spirits and water night and morning during the last month of pregnancy. Bathing the nipples with a little port-wine or brandy will be often serviceable. Lotions, composed of the salts of iron or zinc, have been recommended ; but a more effectual remedy is the tincture of opium, which is easily washed off, while the salts of iron and zinc are often deposited in the rugæ of the nipple, and with difficulty removed. An old,

(and said to be a certain) remedy, is to mix equal parts of finely-powdered gum-arabic and sugar-candy ; sprinkle the nipples over with this powder after the child has done sucking. It absorbs the acrimonious fluid, and defends the breast. When the child takes hold of the nipple it is attracted by the sweetness, and the irritation given by drawing the nipple, in which the pain chiefly consists, is avoided. Washing the nipple and areola with a weak solution of nitrate of silver and distilled water will prove serviceable ; and when cracks or fissures exist, they should be carefully painted with this lotion, with a small camel's-hair brush, so as to enable the solution to arrive at the depth of the cracks ; in which case the nipple should be well and properly washed before the child is again applied to the breast. Pure and fresh palm-oil is said to be one of the most efficacious applications, and the safest to the infant. It need not be washed off previously to applying the child to the breast, unless it be made the vehicle for other substances. A solution of creosote or an ointment composed of it, has by some writers been most strongly recommended. A lotion may be made of one drachm of burnt alum, four ounces of rose-water, and half an ounce of spirits of

wine. White wax and butter is sometimes used. The golden ointment, diluted with spermaceti cerate, may be of service. The nipples may be touched with burnt alum, or with nitrate of silver; the latter is only safe in the hands of the medical practitioner. Mechanical means are resorted to. Shields of several kinds have been used; those with prepared cow's teats are the best. Not applying the infant so frequently to the breast, feeding it occasionally, or having the assistance of a nurse, may assist the remedies recommended. Care must be taken to prevent the milk accumulating, for inflammation may follow, and abscesses be produced. Friction with olive-oil or cold-cream may be used a few days before and after delivery with beneficial result. There are other formulæ which may, under certain circumstances, be useful.

Take of the watery extract of opium two grains; lime-water and decoction of quince seeds, of each six drachms. This lotion to be constantly applied to the nipples by means of a little lint during the intervals of suckling.

Take of powdered gum-arabic half an ounce; alum, five grains. The alum being reduced in a glass mortar to a fine powder, is to be well mixed

with the gum-arabic powder. After suckling, the nipples are to be well dried by soft linen, and this composition is to be applied to the parts affected by means of a camel's-hair pencil.

Take a small lump of alum, the white of an egg, stir them briskly till a coagulation is formed, and apply the same to the nipple as a poultice.

Sir Astley Cooper recommended for excoriation of the nipples, a drachm of borax to three ounces and a half of water, and half an ounce of spirits of wine. He also recommended the breast to be drawn, but he thought the sooner the child could be restored to it the better. Some practitioners use diluted brandy, lotions of zinc or alum, or of calomel and lime-water. Sir Astley Cooper found that ointments did not generally agree with the ulcers; but if used, he preferred those of bismuth, zinc, or simple cerate.

There is little difficulty in healing an ulcer on the nipple; but there is more difficulty in preserving it sound, for when new skin is formed it is easily rubbed off in the action of suckling, and the ulcer reappears. Two points should therefore be attended to, the healing of the wound and the protection of the tender part afterwards. The ulcer having been healed,

the newly-formed skin may be protected by the use of a shield and teat. The restorative process will then become fully established, but it is far better at an early period to use such means to prevent the nipples becoming inflamed or excoriated, and we should spare no pains to accomplish this desirable object. Dr. Rambotham, in his Lectures, makes the following very practical remarks :—" I would advise " you, whenever you have the management " of your patient during gestation,—especially " if it be the first pregnancy, or if she has suffered " from sore nipples under suckling before— " to recommend that an attempt should be made " to harden the delicate and sensitive organ, by " the frequent application of some astringent " wash ; and a strong solution of green tea, with " the addition of about one-fourth of brandy, " or rectified spirits will be found very efficacious for this purpose. Its use should be " commenced soon after quickening, and the " application should be made at least morning " and night for some minutes. Some women " will object, from the trouble it occasions, or " the slight stain it causes on their linen, or " from their thinking it unnecessary, and the " danger remote ; but the trouble is inconsider-

“able, the time required is little more than they
“would occupy in the arrangement of a single
“curl, and the advantage likely to result far
“outweighs any inconvenience it may subject
“them to.”*

ECZEMA OF THE NIPPLE.—This eruption of the nipple is occasionally met with. It more frequently occurs in girls at puberty, or in women who have never been mothers, at the critical period of life, and in old women. If it comes on during the period of lactation it is requisite that the child should be weaned. There are several varieties of this eruption; but we shall here only consider it in the acute and chronic forms. It causes much itching and tenderness of the nipple, which occasionally bleeds when scratched or rubbed. *It consists of minute vesicles, unctagious, crowded together, terminating in the absorption of the fluid they contain, or in superficial excoriations, with more or less serous exudation, concreting into thin flakes or crusts.*† There are chaps occasionally in the nipple and areola, exuding a quantity of secretion and lamellar scabs and

* London Medical Gazette. Dr. Ramsbotham's Lectures, Vol. XVI. Session 34 and 35, p. 36.

† Copland's Dictionary of Practical Medicine, p. 749.

scales are formed subsequently. The axillary glands become swollen, tender, and painful, and there is considerable irritability of the nipple, areola, and glands in the arm-pits. The eczematous affection may be confined to one or both nipples: sometimes it first appears in one, and afterwards affects the other; but one nipple alone may be the seat of this disorder. In the chronic form it is frequently very obstinate, and resists the remedies recommended to be used; and it more frequently assumes the chronic than the acute stage. It more generally commences in spring and summer than in winter; and there appears to be a predisposition in some constitutions, or susceptibility of the frame, generally connected with vascular plethora, favouring its appearance. It may be excited by the contact of either vegetable, mineral, or animal irritants, alkalies, dust, and want of cleanliness. Indigestible and unwholesome food, spirituous liquors, and errors in diet may produce it.

TREATMENT.—The slighter attacks of this eruption may be removed by simple refrigerants, and emollient diluents, cooling aperients, and tepid washing. A lotion may be used, com-

posed of eight ounces of the mixture of bitter almonds, and one drachm of the liquor of potash, or two grains of sesquichloride of mercury : solutions of soda, or potash will be of service. Small doses of nitrate of potash with soda in mucilaginous diluents may be given internally in more advanced cases. Heating tonics and acids have been found more injurious than beneficial. Poultices, cold-cream, solutions of acetate of lead, or hydrocyanic acid, lime-water, and preparations of camphor have all proved serviceable. The application of leeches has occasionally removed the irritability. Proper administrations of aperients are absolutely necessary.

RETRACTION OF THE NIPPLE.—Retraction of the nipple is to be attributed to that reprehensible custom, tight lacing, by which the breast is squeezed into an unnatural form and smaller compass. The nipple partaking of the general pressure is flattened into the surface of the breast. Nature intended it should become enlarged and project ; but we, by our ill-judged fashion, compress it so, that it is depressed in the surrounding structure : adhesion takes place, laying the foundation of future inconvenience

and trouble. The young girl feels no inconvenience, for the functions of the organ are not required, and little notice is taken of the change in the form which has gradually followed ; but when a mother she regrets with sorrow the folly of the tight lacings, and constantly reproaches herself or her friends for such ill-judged means having been employed ; but then it is too late to remedy the inconvenience she experiences. If we look at the nipples of a girl before the age of puberty, we shall observe the nipple to project beyond the surface of the skin, and if left alone to nature will become enlarged, fully formed, and project, when the functions of the breasts will be performed without the slightest inconvenience ; but being contracted, the child cannot suck ; the milk accumulates, inflammation of the breast follows, abscesses are formed, and the mother and the child become the sufferers from the folly of misguided fashion.

TREATMENT.—We cannot do better than give you the means recommended by Dr. F. H. Ramsbotham, in his Lectures on this subject :—
“ After every fresh birth, and in all cases where
“ we have the least suspicion on the subject, it is

“ desirable that on our first visit subsequent to
“ delivery we should enquire of the nurse, or
“ examine for ourselves, respecting the state
“ of the nipple, for if it does not possess its due
“ prominence, we must immediately endeavour
“ to draw it out by means of the breast-pump or
“ pipe, so that the child’s mouth may be able
“ to embrace it ; and our attempts must be made
“ early, because if we delay them until the milk
“ has been secreted freely by the glands, the
“ nipple will be retracted into a kind of cup, or
“ depression, while the fullness and tenseness of
“ the breast will oppose our efforts at withdraw-
“ ing it. If this state be permitted to take
“ place, either inflammation will ensue, or the
“ milk not being evacuated, nature will cease
“ to furnish it, and thus the woman will be in-
“ capacitated for performing the office of a
“ nurse. A flattened nipple may sometimes
“ be rendered tolerably perfect by the use of
“ the pipe or breast-pump ; and it may further
“ be enlarged by the frequent application of a
“ child five or six months old. It is better not,
“ in the first instance, to fatigue the patient by
“ obliging her to support her own infant, for it
“ will neither possess an easy knack of sucking

“ nor strength enough to retain a firm hold of
 “ the nipple. The young infant, then, should
 “ be put to an older breast, and the older infant
 “ to the patient’s; and after a time she may
 “ be allowed to nurse her own. Perhaps the
 “ use of a shield or teat may prove advanta-
 “ geous under the circumstances described.”*

CLASS II.

ORGANIC LESIONS OF THE BREAST, GENERALLY OCCURRING INDEPEN- DENTLY OF INFLAMMATION.

IN this class of disease, at an early period of its origin or during certain stages of its progress, there are few, if any, signs of inflammation present, and Dr. Copland states, “ that this class
 “ of disease of the breast seldom originates in
 “ any form of inflammatory action, or, at least
 “ in an unequivocal and manifest state of in-
 “ flammation; but rather in condition of the
 “ parts and of the system very different from it
 “ —especially from true or sthenic acute in-
 “ flammation. This class is mostly referrible
 “ to low states of vital, altered, or morbid nu-

* London Medical Gazette, April 11, 1835, p. 37.

“trition and secretion in the organ—to local
“irritation and lesion allied with constitutional
“vice or disorder.” Under this class we shall
consider,

Hæmorrhagic congestion, or ecchymosed state
of the mamma.

Atrophy of the mamma.

Hypertrophy.

Scrofulous tumours of the breast.

Painful tumour of the breast, and chronic
mammary tumours.

Neuromatous tumours.

Neuralgic affection of the breast.

Hysterical affection of the breast.

Adipose tumours.

Fibrous tumours.

Cartilaginous and ossific tumours.

Encysted, cystic, and hydatid tumours.

Pancreatic sarcoma.

HÆMORRHAGIC CONGESTION, OR ECCHY-
MOSED STATE OF THE MAMMA consists of an
ecchymosed state of the integument covering
the breast. It is more or less diffused, and oc-
curs more particularly at the catamenial period :
it is very sensible to the touch, and is attended
with pain, which darts down the arm to the

ends of the fingers. It is by no means frequent in its appearance, and depends upon an obstruction or cessation of the menstrual discharge, at the period when this should take place, the breast and the skin covering it becomes more vascular, swollen, and tender; and this lasts for three or four days, when it slowly diminishes in size and discolouration. The colour of the skin at this period is more florid than at other times; the vessels are easily traced, and the veins appear tortuous, or more or less varicose. According to the length of time the complaint is allowed to progress, the more it increases, and the greater it becomes diffused; the pain also is considerably augmented. Extravasation of blood or congestion of the veins frequently causes the ecchymosis. Sometimes it begins in a single spot or several small spots, and has the appearance of a severe blow having caused it. Sometimes a large patch with several small spots occurs, which gradually diminishes in its colour as the menstrual discharge continues. Females who have the mammæ large and loosely developed, and those of a delicate diathesis are more liable to this affection. The cause of this appearance of the breast has already been stated,

so that the cure depends solely upon placing the uterus in a healthy state, that it may perform its functions of discharging the catamenial fluid. The warm hip-bath, cold shower-bath, cold application to the breast, and the exhibition of the usual remedies to promote the menstrual discharge, will, if regularly followed up, produce a cure of this affection of the breast.

ATROPHY OF THE MAMMA.—After a certain period of life, which is earlier in the unmarried state, and also in women who have not borne any children, the mammary gland gradually diminishes in size ; the decrease taking place after each menstruation in an increased ratio, than at other periods. This is more frequently the case when children have been born, but not reared by the mother, and in females, when the gland has not been called into action. Thus we see, soon after puberty, nature causes this gland to become fully developed in size, structure, and shape ; and if the female remains in an unmarried state, after a while the gland gradually decreases in its volume, and in some females almost diminishes to a small portion of its former size ; but this cannot be considered as a true atrophy of the gland, for

if this female becomes married, the gland is still capable of performing its functions, and will soon become of a proper size and structure. True atrophy consists of the gland becoming of a firmer and greyer texture, losing its opaque white colour, and, becoming of a dirty grey. Serum may be sometimes pressed out of an atrophied gland. This state of the mammary gland, after the prime of life, in many instances must be the effect of age, for after the menstrual discharge has left the system there is naturally a gradual decay in the uterine organization as well as the mammary glands.

HYPERTROPHY OF THE MAMMA consists of an abnormal enlargement of the breast, not of its glandular structure, but of its surrounding cellular and adipose tissue : it will often increase to a very considerable size. Dr. Ashburner some time since called me to see a woman with hypertrophy of both of the breasts. When the stays were off, the glands hung down far below the navel. They caused her no pain or inconvenience, except from their size, which was far larger than the head of any person yet seen. The veins beneath the integuments were large and ran in a tortuous manner.

A large pendulous condition of the mammæ may be considered as a species of hypertrophy, when the breasts have not been supported ; when they have been allowed to hang down, and by their weight to cause the cellular texture below the gland upon the pectoral muscle to become elongated. This condition of the breast is greater in women who have suckled many children. It is also very frequent in warm climates, and the breasts become so large that the women in some countries abroad, throw them over their shoulders to support them. If called upon to treat such cases, it would naturally strike us, that the first object would be to keep the gland in its natural situation, upon the chest, by a support so contrived that a certain degree of pressure be applied to the glands as well as supporting them, so that the cellular texture beneath their structure should be induced to contract, which may be assisted by cold, or astringent applications. The pendulous state of the breast may be prevented, and generally cured, when they do not hang down too low, by the proper application of the support, for this purpose. This is an abnormal state of the gland, and one that the female can prevent

by a very little management on her part. Even when in the recumbent position it will be necessary to wear the support, or otherwise the weight of the glands may even then tend to prevent a cure. An elastic net-work, made of some light material, of such a texture that too much heat be not induced in the breast, will answer the purpose, but at the same time the material must not check perspiration.

SCROFULOUS TUMOURS OF THE BREAST.—The mammary gland is very plentifully supplied with lymphatics, and with numerous lymphatic glands, which has been fully explained in the anatomical description of the breast. In habits prone to a strumous diathesis, these glands and vessels, or some part of them, take on a slow inflammatory action, giving rise to one or various indolent tumours, which in an early stage can easily be distinguished from diseases of a much more serious nature. Occasionally a small lump may arise, and remain unnoticed for some time, either superficially or deep in the substance of the gland, keeping in a quiescent state for some months, or even years, or the whole substance of the gland may be scrofulously enlarged. When a small or even a larger-

sized tumour makes its appearance, it is much easier to disperse than when the whole breast participates in the disease. The character of a scrofulous state of the breast is shown in its progress, by a tendency to imperfect suppuration of a strumous aspect. The matter sometimes having a curdy, thick, unhealthy appearance. Ulceration frequently occurs, either on the surface of the gland, or burrows irregularly and deep, in excavated cavernous sinuses; but the local disease does not generally affect the health of the patient. The swelling does not possess that stony hardness as in other diseases of a malignant character, but is frequently tender when touched, and more painful when it has been examined, even ever so tenderly. In some cases the nipple is retracted, which gives the disease a more formidable appearance; but a careful investigation and an examination into the nature of the enlargement, together with the existence of a strumous diathesis, accompanied sometimes with scrofulous enlargement elsewhere, or even strumous ulceration, will, under most circumstances, enable the medical adviser to recognize the nature of the affection.

In scrofulous tumours no change is observed to take place in the skin at the commencement ; but after a time it becomes red, assuming a dirty brick-dust colour ; prior to ulceration it becomes thinner, and after ulceration the edges of the wound are irregular, having a disk extending a short distance around. The discharge is frequently of a serous character, mixed with albuminous flocculent matter. Scrofula, like some other diseases, is said to be hereditary. Yet these diseases, in a strict acceptance of the term, cannot be said to be transmitted from parents to their offspring ; for some individuals of a family pass through life without ever having exhibited any symptoms of them ; and many well authenticated cases may be cited, in which they lie dormant in one generation, and reappear in the succeeding. It is not, then, the actual disease which is transmitted, nor is it anything in the nature of a germ which is implanted in the system of the offspring, and which shoots forth and matures at some particular period of life. A disease cannot, in strictness or propriety, be said to be hereditary in a child, unless traces of it appear at the time of its birth. If so, the class of

hereditary diseases must be considerably diminished. This is the view taken by Hunter, when he laid down his doctrine of predisposition to disease. He drew a marked line of distinction between hereditary disease and predisposition to disease derived from the parent. Then, again, scrofula will sometimes make its appearance in the offspring, when the parents are both extremely healthy, and also in the generation before. This can be explained by some functional derangement in the system; some want of a proper assimilation of the food, by a derangement in the digestive organs, caused by want of proper chemical agents, or mechanical obstruction. Individuals, as well as families, are distinguished by peculiarities of constitution, termed temperaments and idiosyncracies. These seem evidently to be connected with, and to depend upon the degree in which certain organs or systems of organs are developed; and as these peculiarities are constantly observed to run in families, they may be fully considered as hereditary.

The treatment will consist of administering the same remedies as in all scrofulous affections. The various preparations of iodine, bark, steel, with warm sea-bathing, paying strict

attention to the uterine periodical functions, will in most cases tend to cure the complaint. In the treatment of scrofula I have frequently prescribed proteine, either alone or given at the same time with iodine, and the greatest benefits have resulted by continuing for some this new remedy.

CASE.

A lady, twenty-eight years of age, married, having four children living, one having died soon after birth, came from Buckinghamshire to consult me respecting a tumour, about the size of a small walnut, situated deep in the substance of the breast, which she had felt for the last six months, but within the last month or two it had gradually occasioned her more inconvenience, and she was much alarmed that it might be cancerous or form itself into that disease. It was clearly of a scrofulous nature from her general appearance. An ointment was recommended, composed of iodine and iodide of potassium, and she was ordered iodine internally, which was followed up, with at first, small doses of the bromide of potassium, and

afterwards with seven or eight grains for a dose, of that salt. The enlargement under this treatment soon began to diminish, and at the end of two months was entirely dispersed.

CASE.

Mary B———, aged 39, unmarried, and of a thin, delicate constitution, consulted me respecting an irregular swelling on the outer part of the left breast, midway between the armpit and the nipple. She stated that it had existed about four or five years, but of late she had felt more uneasiness in it, and wished to know the nature of it. By an examination of the swelling, it was clear that it was of a scrofulous nature. She was recommended to take five grains of iodide of potassium in infusion of orange-peel three times a-day, and to use a liniment composed of two scruples of iodine to two ounces of compound soap-liniment, a piece of soft flannel was to be dipped into this liniment and applied over the swelling three times a day. By continuing this plan for some little time she was quite cured.

CASE.

The mother of a young lady called to consult

me respecting an irregularity in the shape of one breast, with a very uneasy sensation in it at times, particularly during the monthly periods, or rather before that time. She was nineteen years of age, with a fair complexion, and evidently of a scrofulous diathesis ; but there were no swellings of any of the other lymphatics. The stay had been tight, and caused some pressure against the enlargement. This was ordered to be counteracted : a solution of iodide of potassium and spirits and water was directed to be applied, by means of a soft piece of sponge, frequently during the day ; small doses of the tincture of iodine were administered internally, and in two months the enlargement was quite removed. She has married since and had two or three children, and does not suffer the slightest inconvenience from the former affection of the gland.

When the usual remedies fail in dispersing scrofulous or even other tumours of the breast, the electro-galvanic spark may be passed through the swelling with great beneficial effect. A conductor of a concave form may be placed at the side of the tumour, and the sparks passed through the swelling. This may be done daily ;

and when all other remedies have failed, by a little attention to the application of the electro-galvanic sparks the enlargement will be removed. I have seen a tumour of the size of a small orange dispersed at the Middlesex Hospital in the course of three weeks ; so that should all medical means fail, we may have recourse to this most valuable agent. From observations that have been made in hospital practice we are induced to believe that nothing will produce absorption quicker than electricity. It is true that its use has only been employed after other remedies have failed, so that some of these remedies may still remain in the system, and their effect might be more powerfully called into action by the application of electricity. It is a safe remedy, and no injurious effects have been noticed in any case where it has been unsuccessful.

Lizar says, " The scrofulous mamma is
" nothing more or less than the chronic hyper-
" trophy occurring in the strumous, and is readily
" recognised from the general habit. It is to
" be cured by warmth, fumigating with cam-
" phor, the use of iodine, generous diet, and
" a salubrious atmosphere."*

* Lizar's Practical Surgery. Part II., p. 13.

PAINFUL TUMOURS OF THE BREAST.—Under this head may be classed—irritable tumour of the breast;—chronic mammary tumour;—neuromatous tumours, and neuralgic affection of the mamma; and under the latter we shall consider hysterical affection of the organ.

Irritable tumours of the breast, on dissection, are found to consist of a solid semi-transparent substance, with fibres irregularly interwoven, apparently productions of cellular membrane, rather than of the glandular part of the breast. Sir Astley Cooper was not able to trace any large filament of a nerve into them. They generally attack females of a nervous temperament, and are connected with deficient, difficult, suppressed, or superabundant menstruation, or even leucorrhæa, as well as with other catamenial disorders. Females between the age of sixteen and thirty are usually affected with this species of tumour. The female breast may be liable to neuralgic and hysterical pain, unattended by any swelling or perceptible tumour; but there may be some tumefaction of one or more of the lobes of the organ, called irritable tumour of the breast by Sir Astley Cooper. A circumscribed tumour is sometimes found not larger

than a pea, or seldom larger than a marble, very moveable and extremely painful at times, particularly prior to menstruation; is acutely painful to the touch, and highly sensitive to the pressure of the stay. Sometimes more than one swelling exists; sometimes they gradually cease to be painful, and in some cases disperse altogether.

Dr. Copland states that the treatment of this affection should be directed, first, to the alteration of the local sufferings;—secondly, to the subduing the general irritability;—and, thirdly, to the restoration of the uterine organs to a healthy condition.

Sir Astley Cooper stated that the best local remedies are, a plaister consisting of equal parts of soap cerate and extract of belladonna; poultices of bran, with solutions of belladonna; and oiled-silk or hare-skin, or some other fur worn upon the breast. Leeches may be used when the pain is very severe; but if prescribed for weak or reduced constitutions they may aggravate the irritability of the system. The means we have found the most efficacious are to paint the swelling over with the solution of diacetate of lead every other day, which tends to allay the irritability of the nerves. An ointment may be

slightly rubbed into the breast, composed of ninety drops of the solution of diacetate of lead, one ounce of spermaceti-ointment, with one drachm of powdered opium, well mixed together ; or two drachms of chloride of lead, one ounce of simple cerate, and a scruple of extract of belladonna may be used ; or a fomentation composed of poppy decoction half-a-pint, chloride of lead two drachms, and extract of belladonna one scruple. These remedies applied locally have been found very beneficial. If the biliary organs be at all inactive, which is frequently the case under such circumstances, small doses of chloride of mercury or Plummer's pill, or blue pill, with soap, opium, and extract of hemlock, should be given at night ; and a stomachic or an emmenagogue aperient in the morning ; the preparations of iron or of bark, with soda, or potash, or camphor, taken during the day. Sir Astley Cooper advised the following pill to be taken twice or three times in the day :—extract of conium and extract of poppies, of each two grains ; extract of the seeds of stramonium, a quarter or half a grain.

To restore the functions of the uterine organs, ammoniated iron, carbonate of iron, compound

aloes mixture, compound myrrh mixture, hip-bath of sea-water at 100° or 103°, or an artificial sea-water bath, made with the marine salts.* Salt-water shower-baths or a douche on the loins and hips will all be useful under certain circumstances, when aided by pure air, regular exercise, and attention to diet, with a due regulation of the mental emotions and desires. The electro-magnetic spark will be frequently useful in this class of tumours, not only applied to the enlargement itself, but through the lumbar and sacral nerves; for frequently, when all other remedies have proved ineffectual to produce a due functional performance of the uterine organs, this agent will, after a few applications, produce a very salutary and beneficial effect, and its trial cannot in any way be prejudicial.

CHRONIC MAMMARY TUMOUR.—This tumour consists of a lobulated structure, which can be easily detected by a careful examination. It is generally of a fibrous structure, contained in a cyst, which completely encircles it, and

* Prepared by Thomas A. Brew & Co., Chemists, Brighton; procured in London at Mr. Grindle's, Chemist to the Queen, Pall-Mall.

becomes more dense, according to the size of the enlargement ; but its growth is very slow, and it seldom attains any great magnitude ; but cases are on record where one was removed which weighed nearly seven pounds. Others have been removed of a much smaller weight ; and in some cases ulceration has taken place. This class of tumours is generally free from malignancy ; they sometimes exist for many years almost stationary, and then gradually diminish. Sometimes when present it is not unusual that there should be disease of one of the ovaries, occasionally of a similar character, but frequently of another class, in which case the less either are interfered with, the greater is the chance of preventing one or the other increasing or generating into other stages. The tumour generally arises from the superficial surface of the breast, although sometimes from the under surface, next the pectoral muscle, in which case it is not so easily discriminated : it seldom arises from the glandular structure of the mammary gland itself. At its first appearance, and even afterwards, it exists without producing any pain, but in some instances it is accompanied with an aching pain, extending over the chest to the arm-pits and

shoulder. Even when unattended with pain, at the menstrual period, particularly after manipulation, it may become very sore and painful. It takes place most frequently in single women, or when married in those who have had no children. When it arises from the superficial part of the breast, it is extremely moveable, glides easily under the skin, being chiefly attached by an aponeurosis. The constitution does not manifest any material change, nor does the health in general suffer from its existence. Females between the age of sixteen and thirty-six are more frequently liable to tumours of this kind than at a more advanced age. Sir Astley Cooper observes, "The impression made upon the mind during the dissection of the tumour is, that nature has formed an additional portion of breast, composed of similar lobes, but perhaps differing in the absence of lactiferous tubes. When fresh opened, they appear red in the circumference, but white in the interior."

The slow progress of the swelling, and its remaining nearly in the same condition for months or even years; its lobulated feel, distinctly composed of lobes aggregated into one irregular

mass, with a divided surface; absence of pain or any lancinating stings similar to cancer; the swelling existing for many years, the health remaining unimpaired, or if affected at all, very slightly, together with the youth of the patient, all tend to mark the diagnostic appearance of this class of tumour.

External violence, local irritation, by the pressure of the edge of a bone in the stay, a blow, or any exciting cause may lay the foundation of the formation of this tumour; but it frequently is connected or attended with some sign of uterine excitement or irritation, with vascular determination in the uterine organs, extending to the mammæ, or with greater or less disorder in the catamenia. These causes will generally characterise the development of this tumour. The presence of a tumour of this kind, although not malignant in any way in its character, may, under certain circumstances, gradually pass into that state. Thus a female placed under severe trials, great mental grief, much anxiety, careful watching, disturbed rest, exposure to cold, late hours, fatigue, hard labour, and privations, together with other causes, may cause this tumour, at first so slow

in its progress, to extend to a malignant state, and advance very rapidly. Even when a tumour of this kind remains in an inactive state until the termination of the catamenia, it may then take on quite another character; but frequently before this time it has gradually disappeared.

The cause of these swellings being a derangement in the uterine functions, producing a vascular determination which extends to the breast, our first object in the treatment should be directed to establish a sufficient catamenial discharge, both in respect to the period, colour, quantity, and duration, all of which require our most particular attention, for without we are able to bring this about, any remedies, however judiciously recommended, must prove abortive. Cases are on record where these tumours have, after existing for some months, nay, even years, rapidly disappeared, owing to the cessation of the uterine irritation, which was the cause of the swelling, or by the breast being called upon to perform its natural function in the secretion of milk; the cause, therefore, being removed, the effect ceases. Other instances may here be brought forward, where a sponta-

neous cure has arisen. A female having such a character of tumour changes her condition, being previously single, and the uterine irritation existing. She becomes married. Nature is here called into action; a complete change takes place in the system generally, and in a very short time the tumour, which was before an uneasiness to her mind, becomes imperceptibly removed. Another example to enable us to understand the object we ought to promote. When all our usual remedies fail in removing the uterine irritation, the application of leeches to the neighbourhood of that organ will be very beneficial, particularly when employed at the time that the catamenia ought to make its appearance. The late Sir Charles Bell recommended their use, with great benefit to several cases that came under my notice, as far back as the years 1823 and 1824; and I have repeatedly recommended them to be applied to the verge of the anus, using afterwards the warm hip-bath. When the uterine discharge is scanty, difficult, attended by pain, or delayed, Dr. Copland recommends “an occasional purgative of calomel, and compound extract of colocynth, or the preparations of iron

“ or of iodine, more particularly the iodide of
“ iron, the iodides of mercury, with conium,
“ or the iodide of potassium, with liquor
“ potassæ, with tonic infusions, compound steel
“ mixture, with conium, and attention to the
“ biliary and digestive functions are also very
“ serviceable. When these functions are torpid,
“ a Plummer’s pill, soap, and conium at bed-
“ time, and the infusion of columba, or infusion of
“ cascarilla, with infusion of rhubarb with sub-
“ carbonate of soda, &c. twice a day will gene-
“ rally be of service. A plaister made with
“ ammonia and mercury, and a weak iodine oint-
“ ment are the best local applications; but these
“ should not supersede the internal use of some
“ one of the preparations of iodine in small
“ doses, and for a sufficient long period. Preg-
“ nancy and lactation, however, are the most
“ certain means of removing this disease.”* As
a local application combined with internal re-
medies, the following plaister will be occasionally
very beneficial:—Galbanum plaister, one ounce;
soap plaister, half an ounce; powdered hydro-
chlorate of ammonia, and powdered opium, of

* Dr. Copland’s Dictionary of Practical Medicine, p. 810.

each one drachm ; to be melted and mixed and spread upon wash-leather.

When all remedies fail in producing a proper action in the uterine function, electricity may be employed ; many cases have come under my notice where it has rapidly brought about a very active action in the uterus, all other means failing to do so. The plan of applying it is simply through the lumbar and sacral nerves : one of the conductors may be applied over the spine, the other over the lower part of the abdomen, and down each thigh. Where the function of the uterus is not performed for the want of some nervous energy, the electro-galvanic spark will most frequently remove the deficiency, and tend in a very short time to cure the patient. This remedy is used for other similar purposes. It certainly is one that deserves our greatest consideration. Care, of course, must be taken that it should be employed in a careful and proper manner. For my own part, seeing its effect in a number of cases, I have recommended it frequently, and most successfully, so that its application in such cases *may* be highly beneficial.

NEUROMATOUS TUMOUR.—This species of

tumour sometimes affects the breast ; it consists of the formation of a tumour surrounding and involving a nerve in its texture ; or sometimes it is situated more superficially, and then the extremities, or more minute ramifications of the nerve, become blended in its structure. Whether its situation be around the nerve, or even implicating it, or at its more minute branches, its formation is extremely painful, frequently unattended with inflammation. If placed superficially the pain is more frequent and is more constant, for the slightest touch against the skin tends to increase the pain. The sufferings of the patient under this disease are extremely severe, as in some instances the pain is similar to *tic douloureux* ; the anxiety expressed and the countenance indicates the severe pangs and restless moments of the individual. It is difficult to determine the nature of this tumour, for occasionally it closely resembles the fibrous and medullary deposits, and sometimes, when it attacks the minute filaments of the nerve near the surface of the skin, it has been denominated “ the painful subcutaneous tubercle.” It differs essentially from the neuralgic affection of the breast, by the existence of

a distinct and moveable tumour, which becomes more painful after handling or upon examination, and the pains do not extend over the whole substance of the gland, but shoot with darts in the course of the nerve involved in the abnormal structure; while in the neuralgic affection every part generally of the breast is equally susceptible, except when some portion has been irritated by local means, and even then there is the absence of the tumour. In regard to the treatment of neuromatous tumours little can be done whilst the cause of the pain remains, and its removal by absorption, entirely depends upon the nature of its structure. Should it be small and adipose, or scrofulous, then an attempt to expel it would probably be successful; but if its texture be otherwise early excision will be the only means. Opium plaister, opium and belladonna will often, at their first application, relieve the pain for a short time; but they will soon lose their effect. The means to be employed, when there is a chance of dispersing the swelling, consist of the application of tincture of iodine painted over the seat of the enlargement, iodine ointment, the lotion of hydrochlorate of ammonia

and spirit, fumigating the breast with iodine, the exhibition of Plummer's pill, or a pill of iodide of mercury with Dover's power, sarsaparilla, iodine of potassium, tincture of iodine, &c. The remedies should not be continued any length of time, so as to allow the long existence of the tumour to debilitate the system or affect the constitution too much, as the simple removal of the tumour will soon restore the patient, provided the general health be not too much impaired, and the diseased structure not of a malignant character. Applications of considerable use in such cases have been applied with great success in relieving the pain, by acting upon the nerve and paralysing it, so that the irritability can no longer be kept up in the nervous system. These applications are of much service where there is any inflammatory action existing; and we can most strongly recommend their use in these tumours of the breast. We give the formulæ:—Chloride of lead one drachm, simple cerate one ounce; make an ointment, or add powdered opium one drachm, and extract of belladonna one scruple; or chloride of lead one drachm, water one pint, tincture of opium half an ounce; mix to make

a lotion. Or add extract of belladonna one drachm. Or solution of diacetate of lead sixty drops, extract of belladonna half a drachm, spermaceti cerate one ounce ; mix to make an ointment.

A portion of either of these ointments should be well rubbed over the swelling and along the course of the pain, with the hand, at first three or four times a-day, according to the uneasiness being relieved or continuing. When the pain has subsided, once a-day will be sufficient. The lotion may be applied either warm or cold, according to the feelings of the patient. These applications will only give temporary relief ; but should there be any means available for the absorption of the tumour, those means may be employed when the patient is free from pain. Should it be determined to extirpate the swelling, time should be given for the effect of the lead to subside. The operation should not be performed until after the effect has ceased, or otherwise the wound will not heal so kindly or quickly as would be wished, on account of the diminished nervous power.

NEURALGIC AFFECTION OF THE BREAST.—

This is a painful state of the mammary gland,

and it will be divided into two kinds, neuralgic and hysterical. The former remaining in the same uniform painful state, the latter only affecting the breast at stated periods, during the catamenia, or when the mind has been particularly excited.

Neuralgic mammary affections frequently occur in young women, without any change or alteration in the structure of the breast, or discolouration, but with some increased heat, swelling, and pain, and the breast is extremely tender upon pressure, or when anything accidentally touches it. The pain becomes more severe at the catamenial period ; and the breast increases more in size at that time, but somewhat diminishes afterwards. This painful affection of the mammary gland sometimes arises from accidental causes, as an injury from a blow, or the irritation of a bone in the stay, &c., or from constitutional or functional disturbance. The breast is often so tender that the patient will start away from the slightest and most delicate touch. The pain is not confined to one part, but is uniform over every portion of the mammary gland, and the patient will generally have a very healthy appearance, the skin being

bright and the habit sanguineous. The pain in this affection of the breast often becomes so severe that the young patient will retire to her room to endeavour to ease the pain by tears, remaining there for some hours, until discovered by her relations or friends. This complaint results most frequently from the inert or insufficient functional discharge of the uterus, and the cure depends mostly upon restoring that organ to the due performance of the function it is designed for in the animal economy. The remedies used for the restoration of a proper catamenial discharge will be of essential service in the removal of this painful affection of the breast, and it will surprise some observers to watch how rapidly the pain and all inconvenience will disappear, when the uterus acts regularly and sufficiently. Besides the proper medicinal agents to accomplish the cure of this complaint, the use of the shower-bath every morning; the warm hip-bath at stated periods, and the application of leeches every three weeks, applied so as to abstract blood from the portal system, will be found of much service in removing the pain in the breast, which would otherwise be experienced. Mayo, my late

colleague and esteemed friend, states that, "This
" complaint is frequently in young women, and
" is singularly unmanageable. Local applica-
" tions in general do harm, but I have known
" a belladonna plaister and ice and a blister
" temporarily remove the pain. Tonics in gene-
" ral, especially steel, are of most use in irritable
" breast."*

When this complaint is produced by accidental violence, it occasionally happens that the accident will cause a variation in the uterine functions, and as long as that continues, the complaint will remain uncontrollable.

In neuralgic affections of the breast, without any concentrated tumour, the swelling appears to be merely an incidental complication, as in neuralgia of the face and other parts. The pain, though greatest at some particular part, generally pervades the whole breast, and extends to the shoulder, axilla, arm, and fingers of the affected side, extending even as low as the hip. The slightest pressure occasioning intolerable pain and sensation of heat and cold: the pain is sometimes so intense as to cause sickness, vomit-

* Mayo's Outlines of Human Pathology, p. 565.

ing, and fainting. These symptoms are much increased prior to menstruation, but relieved during that period, and augmented after its termination.

CASE.

M—— J——, aged eighteen years, consulted me in July, 1841, on account of a very painful state of her right breast, for which she had in vain attempted to get relief. Leeches had been repeatedly applied, which, she said, gave her some little ease; but the breast was more painful after their application. She struck her breast about four months before against the corner of a chair as she was stooping down. It gave her a little pain at first, but not sufficient to take notice of. About three months since the pain in the breast became so great that she was obliged to ask a medical gentleman for something to ease it, and since that time it had remained stationary; but at the periods when she ought to be unwell she had suffered more. She had been regular before the accident, but not since. The breast was examined and found to be larger than the other, but no tumour or tenderness of any one part of

the gland more than of another was observable, nor was there any discolouration or inflammation ; and it was considered as a neuralgic affection, caused by the injury, producing a cessation in the catamenial discharge. She was ordered to take two pills composed of ten grains of iron and myrrh twice a-day, to use the warm hip-bath every night, to apply ten leeches so as to abstract blood from the portal system, and to place over the breast a cold poultice of bread and milk, with two table-spoonsful of powdered alum. By the application of the leeches twice and a continuance of these remedies, the catamenial discharge returned, and in the course of two months she was pronounced thoroughly cured, and has remained perfectly well up to this time.

Remarks.

The termination of this case in a perfect cure fully warrants the conclusion that it was owing to an obstruction of the uterine discharge ; for as soon as that had been restored, she found considerable benefit, and after it had occurred a second time she felt perfectly free from pain, and the breast did not trouble her in the least.

HYSTERICAL AFFECTION OF THE MAMMARY GLAND.—We have been inclined to divide neuralgic affection of this organ into this species of complaint, being at the same time fully impressed with the prevailing medical opinion, that the term hysterical is often used as a cloak to hide our ignorance, for when we are unable to account for certain symptoms, we are but too apt to lay them down as hysterical. We have applied the term here to a milder kind of neuralgic affection of the breast, which does not remain the same at all times, but returns at intervals and periods which are by no means regular, and dependent either upon some undue excitement or irregularity of the uterine function. This complaint is by no means uncommon, and occurs in the young, in the middle-aged, in the single, and sometimes in the married female. The uneasiness is often more severe, and consists of a spasmodic pain in the breast, a kind of catching or twitching in the gland, continuing for a few seconds, then subsiding, and again returning at irregular periods; the pain being so severe as to occasion the patient to call out or apply the hand over the breast, and to cry, which

occasionally terminates in an hysterical fit, and at other times only a twitching in the part is described by the patient. Upon examining the breast not the least swelling or variation in the structure is observable, nor any discolouration, but sometimes a little more heat is distinguished. The cure of this affection of the breast is to be accomplished by the exhibition of the disulphate of quinine, or pills with aloes and myrrh, the preparations of steel, the use of the shower-bath; and should the pain be very severe, a liniment composed of soap-liniment, opium, and belladonna may be applied. The pain is not always confined to one breast; either may be occasionally affected. When the catamenial discharge is deficient or defective, considerable benefit will result from the use of the electro-galvanic spark.

ADIPOSE TUMOURS.—These swellings are not uncommon, and are formed in the adipose structure that surrounds and invests the glandular portion of the breast. It has been pointed out in the anatomy of that organ, that many persons owe the size of the breast principally to the adipose structure which covers it, and which extends between the several lobules of the

gland itself. A great portion of the adipose substance being above the gland, between it and the integument, but some little below the gland, upon the pectoral muscle. By some primary inflammatory action, set up by a constitutional or a local cause, a congeries of vessels is formed, which are ultimately induced (perhaps by an excess of carbon existing in the system) to deposit a superabundance of fatty matter, and a cyst around it, composed of a delicate membranous expansion of cellular tissue. This formation is unattended by pain or any feeling that the patient can be sensible of, and it is only by the size increasing, or by the hand passing over it that it is discovered; except by its pressure, when it implicates or involves a nerve, and then the tumour is accompanied with pain. It is irregular, elastic, and doughy in its feel, and sometimes intersects the lobulated structure of the gland. It is not then moveable, except with the gland itself; when this is not the case it can be readily moved, and is easily distinguished from any disease of the gland, by its feel, also from any superficial scrofulous or other affection of the breast. The size of this tumour varies considerably, and in a

great measure depends upon the time of its growth. Sometimes it is as small as a nut, and in other cases it occasionally involves a great portion of the adipose tissue of the breast, so as to constitute almost hypertrophy of the organ. Cooper says, "I have myself removed "one from the breast of a woman which weighed "fourteen pounds ten ounces."* Like all fatty tumours it occasions little inconvenience, except from its size interfering with the dress, or a nerve being involved in its texture. Should this class of tumour take its original seat in the cellular tissue below the mammary gland, which it rarely does, the glandular structure above the swelling is elevated over the tumour, so as to mask the character of the disease, and this renders it difficult, at first examination, for a surgeon to determine the nature of the complaint. An adipose tumour may be formed upon any part of the cellular membrane covering the pectoralis major, and be perfectly distinct, and have no connexion with the mammary gland whatever, forming a distinct and isolated swelling: its character in this case is extremely

* Sir Astley Cooper's Lectures, p. 394.

easily recognized. The seat of this disease is sometimes between the mammary gland and the axilla, placed upon the surface of the serratus magnus anticus, below the inferior border of the pectoralis major, beneath the lymphatic glands, being perfectly distinct from them; and this tumour may be of a circumscribed form or of an irregular shape. When this is the seat of the tumour, it is generally attended with considerable pain, as it is more in the immediate neighbourhood of the minute filaments of nerves passing from the axillary plexus, and also those nerves arising from the intercostal, piercing the external intercostal muscles, to be distributed upon the arm. A tumour in this situation may be moved freely in every direction; and if so, it points out that its situation is very superficial, for if it were deeper seated it would most likely involve the intercosto-humeral nerves, which would tend to make it more immoveable, attended with pain, not only in the tumour, but also in the arm and in the side, much lower down than the swelling, along the course of the external inferior respiratory nerve.

“Adipose or fatty tumours may be distinguished into three classes (*Müller*). The varie-

“ ties of lipoma form the first ;—adipose cysts
“ the second, and the laminated fatty tumour
“ the third. In lipoma the fat is contained in
“ ordinary adipose tissue, and is consequently
“ separated into innumerable isolated compart-
“ ments by the walls of the contiguous cells.
“ In adipose cysts, the fat is not distributed
“ through small cells, but is contained, partly in
“ a fluid state, partly in the form of fat globules
“ in the interior of a larger sac, which is ge-
“ nerally furnished with thick membranous
“ parietes. In the former, the production of the
“ new fat takes place just as in the healthy body ;
“ while in the latter a single fat cell appears to
“ become predominant, and its walls being thick-
“ ened it constitutes an independent cyst.*

“ Fatty tumours present many varieties, partly
“ in their structure, partly in the nature of the
“ fats they contain. They always consist of an
“ animal organized base, composed, not of fat,
“ but of the cells or cysts secreting it, and of the
“ fat itself. Their nature may be, in part, deter-
“ mined by the physical appearance of the fat :
“ in part it is discovered by the action of cer-
“ tain re-agents ; some fat being capable of con-

* Müller on Cancer and Morbid Growths, p. 153.

“ version into soap, while another kind of fat
“ is incapable of undergoing that process. The
“ fatty constituent of these growths is fusible at
“ a certain temperature, greases blotting-paper,
“ is extracted by hot alcohol or ether, and is
“ again deposited in forms either crystalline
“ or irregular on cooling or evaporation. To
“ this class, lipoma, or the common fatty
“ tumour, may be referred, and cholesteatoma,
“ or the laminated fatty tumour. In these
“ growths the fat is usually almost entirely con-
“ tained within its secreting organs, but in
“ those other structures of which fat is not
“ the chief element, it generally exists ei-
“ ther in the form of oil-globules, or of gra-
“ nules, or as minute crystals.*

“ *Fat* is not an organized tissue. It is col-
“ lected in the cellular tissue by a *deficiency of*
“ *oxygen*, and an abundance of non-azotised food.
“ The chief source of fat is starch or sugar, the
“ composition of which is such, that if deprived
“ of oxygen fat remains.”

“ The formation of fat, like other analogous
“ phenomena in which oxygen is separated in the
“ form of carbonic acid, is consequently accom-

* Müller on Cancer and Morbid Growths, p. 11.

“panied by a disengagement of *heat*. This
“change supplies to the animal body a certain
“proportion of the oxygen indispensable to the
“vital process ; and this, especially in those
“cases in which the oxygen absorbed by the
“skin and lungs is not sufficient to convert
“into carbonic acid, the whole of the carbon
“adapted for this combination. This excess of
“carbon, as it cannot be employed to form a part
“of any organ, is deposited in the cellular tissue
“in the form of tallow or oil.”* Thus then,
as heat must be disengaged in the formation
of fat, in the treatment of fatty tumours, while
applications are used for the purpose of inducing
the absorption of the fat already deposited,
might not cold constantly applied over the
tumour tend to disperse it, as well as prevent
its increasing in size, by keeping the tempera-
ture low enough to prevent disengagement of
such heat necessary for the formation of a fresh
supply of fat for the increase of the tumour ?

The treatment of adipose tumours in a great
measure will depend upon their size, condition,
and situation in regard to the mammary gland
itself ; but such means should be employed as
will tend to prevent an increase in their size

* Liebig's Organic Chemistry, p. 93.

and produce absorption of the fat already formed. Iodine, iodide of potassium, iodide of mercury may be used externally, as well as being administered in proper quantities internally. Strong astringent solutions may also be applied with success. Acetic acid, properly diluted, may be painted over the enlargement, as also the solution of diacetate of lead. Strong ammonia may be carefully used; but care should be taken not to induce too much heat, as under such circumstances the swelling has been observed to increase in size, as also when inflammation ensues from any of these applications, or even from any local exciting cause. Thus an injury to the swelling has caused it to increase in size, and produce symptoms that were not previously present. We are generally consulted too late for the usual remedies to produce absorption, for it is only the size of the swelling that first attracts the patient's attention. There being no pain in it, the patient too frequently treats it with little attention, until its increase or the fear of it being of some consequence, induces her to seek medical assistance. We should then use those remedies already recommended, and carefully watch the result.

The tumour may be painted with tincture of iodine every morning; the tincture applied so as not to blister the skin, but only to make it tender. It may be fumigated with iodine in the same way as scrofulous swellings. Blisters have been recommended, but at present no beneficial result from their use can be adduced. Sometimes these tumours, (but very rarely,) run into a malignant character, and the use of blisters may accelerate the appearance of this disease, and under such circumstance it is advisable not to use them. When adipose tumours are situated in the neighbourhood of the mammary gland, should inflammation follow the use of the remedies proposed, it should be treated in the same way as inflammation occurring in other parts from the same cause. Iodine may be administered internally for the purpose of promoting absorption. Should all means fail to reduce the tumour, excision will be the best plan, and it may be removed without any danger. The disease is quite local and does not in the least endanger life, except in cases where there is disease in other parts of the body. Going round the wards of the hospital one day, the late Sir Charles Bell requested me to remove an adipose tumour from the hip of a

patient in Northumberland Ward, which was done a few days afterwards, The tumour was about the size of an orange, quite adipose: the wound appeared healthy for the first three days after the operation; it then began to inflame, and the patient to complain of pain in the side. At the end of a week she died. Upon examining the body, the liver was found to be in a diseased state, (fungus hæmatodes,) which had existed before the operation, and was excited into an active form by the removal of the tumour. Such cases are very uncommon. Adipose tumours may generally be removed with a considerable degree of safety under most circumstances.

CASE.

A married lady, forty years of age, with three children, the youngest six years old, consulted me the 24th of March, 1835, on account of a swelling which she thought was cancer, situated on the inner part of the right breast. She resided in Kent, and was only in town for a short period. She stated that the swelling was not in the least painful; that she had never

suffered in the least from it, excepting in mind ; and she constantly fancied it would turn to cancer, if it was not already that disease. Upon examining the tumour, it was about the size of a pigeon's egg, irregular, and of a doughy feel. It was moveable and appeared perfectly distinct from the mammary gland, which was in a healthy condition. She was in very good health in every respect ; pulse 75 and regular ; tongue clean ; bowels acting every morning ; slept well, with the exception of the thoughts of the swelling. She was strongly assured that the tumour was not of a cancerous or of a malignant character, that it was of the simple fatty-kind, and that it could neither affect the gland of the breast itself or in the least injure her health. She was recommended to paint the skin over the swelling with tincture of iodine, every other day, washing it night and morning with a tepid solution of bay-salt and water. This plan she pursued for a month ; when she again visited me, saying that the tumour was not gone, nor had it diminished in the least ; that she felt it four or five times a-day, but could not find that it had subsided at all, and she was very anxious about it ;—was I still sure that it was not cancerous ? She

was again earnestly assured that the tumour was not cancerous, but fatty, and that it could not be expected to get well when she was constantly irritating it by examining it so frequently each day. She was recommended to apply only the bay-salt and water to it, not to fret it in the least, and to make her mind perfectly easy, that in case it did increase the worst that could happen was its removal. She was advised to return into the country, and to inform me of the result. Three months after this, in the month of July, this lady again called upon me, informing me she was more and more convinced that the tumour was cancerous; that she had consulted two or three practitioners in the country, and they all advised her to have it removed; but she was resolved to see me first to hear my opinion. She was informed that the tumour was still of the same character as when last examined; that it was true it had increased, but that it was not to be wondered at, considering every circumstance; but that if she was willing to have it removed she would then be satisfied of the class of the swelling. She entreated me to take it away, and as soon as possible. A day was therefore appointed,

and she was most strongly advised to calm her mind, or otherwise it would not be prudent to remove it. She promised to conform to everything pointed out, if she was only satisfied that the swelling was not cancerous, for the sake of her three children. On the day appointed I removed the tumour by two small elliptical incisions, taking away the whole of the surrounding cyst, without in the least injuring the mammary gland. The edges of the wound were brought together by adhesive plaister, but it was found necessary previously to secure the bleeding arteries, and the ligatures were brought through the wound, a compress of lint and a lotion applied. She became almost impatient to see what had been taken away. The tumour was then shown to her, which proved to be adipose; the fat being contained in three or four small cysts, which constituted its lobulated form, and the irregularity of the feel: she became perfectly satisfied, and from that period she rapidly recovered.

The husband of this lady stated, some time afterwards, that she was quite free from any return of the swelling, that her mind was quite calm; and that she never even hinted about her previous anxiety.

Remarks.

This case illustrates the effect produced upon the mind by the existence of a malady, and had any previous predisposition to cancer lingered in the constitution, no doubt the tumour would have assumed a malignant character ; and considering every circumstance, the removal of the adipose structure was the safest and surest mode of treatment : in such a case, and under similar symptoms, where that irritability of mind occurs, it would be prudent to have recourse to excision with as little delay as possible.

CASE.

S—— H——, fifty years of age, admitted under my care as an out-patient of the Middlesex Hospital, August 20, 1842, with an adipose tumour below the left axilla. She stated that she discovered the swelling about sixteen months before ; that it had been gradually increasing since that time. At first it did not give her any pain, but that latterly she had suffered occasionally very much from the pain ; not so much in the tumour as in the side below and

somewhat behind the breast. This pain was sometimes so severe that it almost prevented her breathing. It seemed to catch her short when she was drawing in her breath. She suffered frequently from pain running down the arm ; this pain was at the back part of the upper arm, also on the inner side. When she worked hard the tumour became painful and more swollen, and the pains already described increased to such a degree as to oblige her to desist. Her health generally was not good. She suffered from pain in the inside, at the lower part of the abdomen. Her bowels were usually constipated, and she felt very weak and low. Upon examining the tumour it was irregular at its edges, doughy in its feel, broader from before backwards than from above downwards ; the integuments above it were not discoloured, and only elevated to a slight degree. It was moveable to a certain extent in all directions, but gave the idea of its being attached to the muscle beneath it. The whole of the tumour, even at its upper part, was perfectly detached from the axilla. She stated she did not mind the tumour, if she could be relieved of the pain in her side and arm. She was ordered

to apply the iodine ointment to it night and morning; to take two compound colocynth pills every morning, and a compound conium pill with opium every night, as she could not sleep.

Aug. 27.—She was somewhat better in her general health. The bowels had been relieved twice daily. The tumour was much about the same, and also the other symptoms.

Sept. 3.—She was still better in regard to her general health. The pain at the lower part of the abdomen had been considerably relieved. She complained of being weak. The swelling was about the same; it may perhaps have been a little firmer, but the pain in the arm and in the side continued. She was ordered to take two grains of the disulphate of quinine with a wine-glassful of compound infusion of roses. To continue the iodine ointment and the pills.

Sept. 10.—Her general health had improved. She stated that she was stronger, but still could not work on account of the pain in the arm and side; and when she washed, which she was obliged to do, the tumour increased, and became so uncomfortable that she was obliged to remove her stay, which enabled her to continue for a short time longer, but ultimately she was

obliged to leave off. Upon examining the tumour we were impressed with the idea that it was much in the same state, and had not altered its character in any respect. The remedies were desired to be continued.

In the early part of October she was strongly advised to have the swelling removed, particularly as her health had so considerably improved; but she would not consent. The pain at the lower part of her side, no doubt, was owing to the adipose swelling pressing upon the inferior respiratory nerve, as it produced some difficulty in breathing, more so after using the arm. She still persisted in her determination of having no operation performed, and some time afterwards we lost sight of this patient. The situation of this tumour, not involving the mammary glands or the lymphatic glands in the axilla, was very favourable for removal, more so after her health had been improved; and little doubt could be entertained of the success of the operation.

FIBROUS TUMOURS OF THE MAMMA.—An interesting detail of fibrous tumours of the mammary gland was read before the Members of the Academy of Medicine, Paris. A very

animated discussion took place on the subject, and the memoir created the most extraordinary interest throughout the profession in France. The paper was by Prof. Cruveilhier. This memoir contains all the important points that might be adduced in respect to this species of tumour, and we cannot do better than quote the professor's observations on this subject.

“ I purpose in the following memoir drawing
“ the attention of the Academy to an anatomo-
“ pathological and clinical question, which, in
“ my opinion, has not hitherto been sufficiently
“ studied. I mean fibrous tumours of the
“ mammæ, an affection extremely frequent,
“ and which is daily taken by practitioners for
“ scirrhus, or hard cancer of these organs, and
“ as such extirpated.

“ This memoir was written in order to point
“ out the anatomical and clinical characters of
“ fibrous tumours of the mammæ; to show how
“ they differ from the scirrhus or hard cancers
“ of these organs; and to prove, 1°, that their
“ extirpation is not always necessary, but is,
“ to a certain degree, optional, for they never
“ degenerate; 2°, that when extirpated they
“ never return, at least, never like confirmed

“ cancer ; 3º, that a fibrous tumour is a local
“ affection, an organic production, entirely in-
“ dependent of a general diathesis, acting either
“ as cause or effect.

“ It is to be hoped that the discussion of this
“ memoir in the Academy (which I earnestly
“ solicit for the advancement of science and the
“ good of mankind) will throw some light on so
“ important a point of pathology, which is men-
“ tioned neither by Boyer in his *Traité des*
“ *Maladies Chirurgicales*, nor by Sir A. Cooper
“ in his Memoir on the Diseases of the Breast,
“ and which is merely indicated in the more
“ recent treatises on diseases of the mammæ.

“ But in order to solve the question, it is
“ necessary to define the manner in which it
“ ought to be viewed ; consequently I will,
“ before describing the fibrous tumours of the
“ mammæ, offer a few considerations on fibrous
“ tumours in general.

“ *Fibrous Tumours in general.*—Of all the
“ numerous organic productions which develope
“ themselves in the midst of our tissues, one
“ which offers the most characteristic signs,
“ is that known under the name of *fibrous tu-*
“ *mours* or *fibrous productions*.

“ Before the anatomo-pathological researches
“ which signalized the commencement of the
“ present era, they were comprised under the
“ denominations, somewhat vague, of tumours,
“ scirrhus, cancer, polypi, &c. Bayle was the
“ first author who gave an accurate description
“ of the fibrous tumours of the uterus, and the
“ remarkable researches of modern days may
“ be considered as the development of his ideas,
“ and their practical application.

“ But, following the example given by Bichat,
“ who said that each tissue had its own peculiar
“ lesion, Bayle propagated an error in his me-
“ moir, when he stated that fibrous tumours
“ were only to be met with in the uterus.
“ Doubtless it is in this organ that the most
“ favourable conditions for the production and
“ development of this disease are to be met
“ with, but it is likewise to be found in every
“ organ in which fibrous tissue exists, and may
“ be divided into two classes; 1°, *Engrafted*
“ *fibrous tumours*, or those which are attached
“ to the surface of a membrane, like a plant :
“ fibrous polypi of the nose ; those which arise
“ from the periosteum, such as fibrous tumours
“ of the dura mater ; fibrous, cartilaginous, and

“ osseous tumours, which are produced by the
“ periosteum, which may be comprised under
“ the generic term of *osteo-chondophytes*.—
“ 2°, *Non-engrafted fibrous tumours*, or those
“ placed in the centre of different organs, such
“ as fibrous tumours of the uterus, the ovaria,
“ the mammæ, the testes.

“ These preliminaries pointed out, we will
“ next pass in review the characters common to
“ fibrous tumours.—1°, *Character founded on*
“ *the seat of the disorder*. Fibrous tumours
“ develop themselves generally in the midst of
“ a fibrous tissue.

“ 2°.—*Character founded on shape or size*.—
“ The shape is generally spheroidal ; their sur-
“ face even or *mammelonnée* (*mammillatus*) or
“ deeply furrowed, owing to their being com-
“ posed of lobules, Their size varies from that
“ of a millet-seed or cherry-stone to that of the
“ head of an adult, and larger, some having been
“ met with weighing forty-five pounds.

3°.—*Character founded on the mode in which*
“ *they are united to the organ in which they are*
“ *situated*.—With the exception of the engrafted
“ fibrous tumours, which seem to be the result
“ of a sort of vegetation on, or extension of

“ the tissue of the organ itself, these organic
“ productions are united to the parts in which
“ they develop themselves, by a loose cellular
“ tissue, so that *enucleation* (*enucleatio*) may be
“ performed with the finger, a blunt probe,
“ or by gently pulling, and does not need the
“ assistance of the knife ; in this respect they
“ may be said to resemble a cyst (with which
“ they are frequently confounded) in being com-
“ pletely separated from the surrounding parts.

“ 4°.—*Character founded on their texture.*—

“ Fibrous tumours offer a density which can only
“ be compared to that of cartilage, or the tissue
“ of the uterus when empty ; and were it possi-
“ ble to admit the existence of the fibro-cartila-
“ ginous tissue described by Bichat, it would
“ be to it that it ought to be likened. Effec-
“ tively, they are formed of linear fibres of
“ an albugineous nature, closely united, and
“ crossing each other in different directions, and
“ often divided into several clusters of fibres,
“ knotted together so as to make separate lobes
“ or lobules.

“ Fibrous tumours contain veins which origi-
“ nate in their substance, by very small
“ radiculæ, and whose trunks are to be found in

“ the surface of the swelling, or between the
 “ lobules when these last exist. These veins
 “ anastomose with those of the organ, in which
 “ the tumour has developed itself. No artery
 “ has been seen in these organic productions,
 “ and an injection made into the arteries of the
 “ surrounding parts never penetrates into their
 “ interior ; finally, no lymphatic vessel, nor
 “ nerve has as yet been discovered in them.
 “ Considered, therefore, as to their texture, the
 “ only organic element they possess, is a fibrous
 “ tissue, nourished by veins. Life in these
 “ tumours is very obscure, and is supported by
 “ the venous blood, agitated by an extremely
 “ feeble oscillatory motion. Organisation and
 “ life is, therefore, reduced to its simplest ex-
 “ pression.

{ “ 5°.—*Character founded on the mode of develop-*
 “ *ment (evolutio).*—Fibrous tumours present from
 “ their apparition the same characters as when
 “ completely developed, let their size be that of
 “ a cherry-stone, or of the head of an adult.
 “ Numerous observations have led me to the
 “ conclusion, that if some fibrous tumours be-
 “ come cartilaginous or osseous, a certain num-
 “ ber were so from the first.

“ 6°.—*Characters founded on the consecutive pathological symptoms.*—I include under this head A, the consecutive lesions produced by fibrous tumours in the surrounding tissues; B, the consecutive changes which take place in the tumours themselves.

“ A. *Consecutive lesions of the surrounding tissues.* — Fibrous tumours are troublesome, merely from their size and their weight; they are true foreign bodies, quite harmless, a species of parasite, whose vitality is very limited; and which cause, in the tissue in which they are developed, but a few inevitable modifications of nutrition and circulation.

“ B. *Consecutive changes which take place in the tumours themselves.*—These changes are but few in number. The tumours may increase in size indefinitely, or remain stationary; several facts authorise the conclusion that they are susceptible of decrease, of a species of atrophy. Again, they may become osseous, by phosphate of lime being deposited in their interior; or the seat of an œdema, which dissolves their component elements, and renders their lobules more apparent. In this last case the tumour is often saturated with a

“ liquid very analogous, at least in appearance,
“ to synovia. They never degenerate into can-
“ cer, and I consider myself right in asserting
“ (this character being, in my opinion, of the
“ highest practical importance) that there is in-
“ compatibility between a fibrous tumour and
“ cancerous degenerescence.

“ These are the general characters of fibrous
“ tumours ; and now let us examine if they are
“ applicable to certain organic productions to
“ be met with in the mammæ, and in order to
“ solve this question, I will quote a great num-
“ ber of clinical, and some few anatomo-patho-
“ logical facts. But first it is necessary to state
“ that of all the organs of the human body, the
“ mamma is that which offers in its structure
“ the greatest proportions of fibrous tissue ;
“ that besides the adipose tissue, two other ele-
“ ments form essential portions of the texture of
“ these organs. A frame or ground-work of a
“ fibrous nature, and granulations or glandular
“ lumps. These granulations can be studied
“ only on females who die while pregnant, and
“ still better, immediately after delivery, or
“ while giving suck ; except under these cir-
“ cumstances, the mammary granulation^s are

“ but slightly developed, and this is owing to
“ the absence of secretion in the organ : after
“ the cessation of the catamenial flux, and espe-
“ cially in very old females, they seem to dis-
“ appear entirely, and the fibrous tissue alone
“ remains. It is then evident that the mammæ
“ possess to a considerable extent the necessary
“ conditions for the development of fibrous
“ tumours.

“ *Symptoms.*—Fibrous tumours of the mam-
“ mæ present themselves to our observation
“ under the form of small spheroidal swellings,
“ varying in size from that of a millet-seed or
“ cherry-stone to that of an egg and upwards :
“ surface sometimes smooth, at others uneven ;
“ in general very hard, and sometimes like a
“ stone ; almost always subcutaneous, still in
“ some cases they are developed in the midst of
“ the tissue of the mammæ ; easily circum-
“ scribed ; quite distinct from the mammary
“ gland, to which they are attached by a very
“ loose cellular tissue ; as mobile as a lymphatic
“ gland, and like it, rolling under the finger
“ which touches it, from which symptom the
“ denomination *gland*, under which it is com-
“ monly known, is derived. To resume, sphe-

“ roidal form, perfectly limited; mobile; independent of the tissue of the organ in which it is developed; these are the signs by which these tumours are to be recognized; and these are the characters which I assign to fibrous tumours in their generalities.

“ From these symptoms, every practitioner will readily recognize a disease of the *mammæ*, for which he has repeatedly been consulted. But hitherto, the fibrous tumours of the breast were distinguished, neither practically nor anatomically, from the other lesions of these organs, and especially from *scirrhus*; the consequence was, that they were confounded one with another, and submitted, consequently to the same treatment. For fibrous tumours, as for *scirrhus*, authors thus express themselves: the tumours of the *mammæ*, known under the denomination *glands*, may remain stationary, or nearly so, for a considerable length of time; but towards the age of forty, forty-five, or fifty, they almost always increase with rapidity, encroach on the neighbouring parts, infect the whole system, and give rise to all the symptoms of inveterate cancer.

“ The conclusion to which such an opinion

“ must of necessity lead us, is immediate extirpation, as the degeneration was less to be feared when the tumour was extirpated in an early stage, than when permitted to remain a considerable length of time in the part. Immediate extirpation of all the tumours of the mammæ was the only rational mode of treatment: it must not, however, be supposed that in the opinion of the practitioners who gave such advice, it was established beyond a doubt that the tumours were susceptible of degenerating, and that consequently their extirpation was absolutely necessary; but, unable to form a positive diagnosis between the tumours which were cancerous and those which were not susceptible of degeneration, they preferred operating ten times uselessly, rather than omit doing it once where extirpation was necessary.

“ This anatomo-pathological study of the lesions of the mammæ is still more indispensable; for, have we not seen a cyst, an œdematous hardening of these organs, taken for cancerous tumours, and often operated on as such.

“ This was the mode of treatment adopted by

“ me fifteen years ago. I delayed advising the
“ operation just long enough to prepare the
“ patient, in general I will add, very docile and
“ resigned, as soon as the terrible word *cancer*
“ is pronounced. But some doubts having
“ arisen in my mind as to the precise nature of
“ these tumours, I hesitated to advise their ex-
“ tirpation. These doubts arose from having
“ observed ; 1°, several patients on whom the
“ tumours were mobile, circumscribed, not pain-
“ ful, not adherent to the surrounding parts ;
“ the persons affected being young girls scarcely
“ pubescent, and women enjoying perfect health ;
“ 2°, the existence of several in the same, or in
“ both mammæ, simultaneously. On reflection
“ I asked myself : Ought these small tumours,
“ often discovered by mere chance, to be con-
“ sidered as the first stage of cancer ? These
“ doubts became stronger and stronger when I
“ observed that these tumours in several females
“ who would not consent to have the operation
“ performed, and with others with whom I had
“ advised delaying it, neither increased in size
“ nor degenerated, though many years had
“ elapsed since I first examined them, and
“ though some of the patients became pregnant,

“ and suckled their children, and others were
“ no longer after the manner of women. Again,
“ the fact that many cases, when the tumours
“ were extirpated with the bistoury, did not
“ relapse, may be mentioned as a clinical proof
“ of their harmlessness, and that their nature is
“ completely foreign to cancerous degeneration,
“ circumstances very frequent after the extirpa-
“ tion of true cancers of the breast. In order
“ to prove the truth of this assertion, anatomo-
“ pathological facts were still wanting; but no
“ considerable time elapsed before opportunities
“ presented themselves to me of observing seve-
“ ral cases, and establishing the fact beyond a
“ doubt. On examining attentively many of
“ those tumours extirpated by different practi-
“ tioners as scirrhus, and cancer in the first
“ stage, I remarked that a certain number
“ offered manifestly the same characters (form,
“ density, texture) as the fibrous tumours of the
“ uterus, and not at all those of a cancer. By
“ this anatomical examination of fibrous tumours
“ of the mammæ, I was enabled to verify a re-
“ markable pathological fact, viz., that a certain
“ number which at first sight appeared solid,
“ were hollow; and on cutting them in two,

“ each half was easily turned inside out, so that
“ its external surface became internal, and vice
“ versâ. The outer surface was covered with
“ globular vegetations and fibrous granulations,
“ sometimes isolated, sometimes ramified as
“ polypi. These vegetations or fibrous globules,
“ perfectly similar in every respect, were sepa-
“ rate from, or adherent, by means of short
“ fibrous prolongations, to each other. In the
“ case just described, these vegetations, or knots,
“ or fibrous swellings in juxta-position only, form
“ a cavity without walls.

“ Other differences sometimes present them-
“ selves; for instance, I have observed, in the
“ centre of these fibrous bodies, a cavity full of
“ viscous liquid, very analogous to synovia.
“ Again, I have seen several cases in which
“ these tumours had become œdematous, and
“ increasing rapidly in size had on that account
“ been extirpated. These œdematous fibrous
“ tumours of the mammæ are exactly like those
“ of the uterus; their substance was penetrated
“ by a viscous liquid analagous to synovia,
“ and here and there were to be found small
“ cavities without any lining membrane, not
“ cysts, and which contained a fluid.

“ The following case, as complete as possible,
“ may be taken as a type of what is to be met
“ with in patients affected with fibrous tumours
“ of the mammæ.

“ Mrs. C——, aged forty-four, strong con-
“ stitution, rather lusty, healthy, and blooming,
“ whom I met frequently in society, consulted
“ me about fifteen years ago on account of three
“ very firm tumours in the left breast—two of
“ the size of a hen’s egg, and one in the right
“ of the size of a turkey’s egg. These tumours
“ could be easily limited, were of a stony or
“ ligneous hardness, mobile, and quite separate
“ from the gland; symptoms which I consider
“ characteristic of *fibrous tumours of the mammæ*.
“ Another important fact which must not be omit-
“ ted, is, that they commenced with puberty.
“ The patient, who had become of late much
“ stouter, thought that she perceived an augmen-
“ tation in the volume of the tumours, and as the
“ epoch for the cessation of the catamenial flux
“ drew near, she became fearful of accidents,
“ and desired something to be done. My opinion
“ was, that there was no danger; that these
“ tumours were not of a cancerous but fibrous
“ nature, and consequently would not degene-

“ rate ; that it would be time enough to operate
“ when from their size they incommoded the
“ patient ; that if they were not extirpated,
“ nothing ought to be done. Unfortunately,
“ my advice was not followed. A practitioner
“ thought he could succeed in obtaining their
“ resolution by reiterated applications of leeches,
“ tepid baths, and an extremely debilitating
“ regimen. But this mode of treatment, this
“ species of Valsalva method by leeching, caused
“ the patient to grow considerably thinner, with-
“ out producing the least effect on the tumours.
“ After following this treatment with perseve-
“ rance during eight months, the patient in this
“ weakened state was affected with an erratic
“ erysipelas, which invaded successively the
“ whole body, and gave rise to an erysipelalous
“ phlegmon, which ended fatally. Called in
“ consultation a few days previous to that event,
“ I was requested to attend the autopsy, the
“ result of which was :—All the internal organs
“ healthy ; the three tumours in the left breast
“ still mobile, limited, easily separated, not only
“ from the adipose tissue that remained, but
“ likewise from the mammary gland to which
“ they were united by a loose cellular tissue ;

“ two of these tumours were of the size of a
“ hen’s egg, the third of a walnut ; their surface
“ was smooth, mammillary ; their tissue ex-
“ tremely dense, and offered all the characteristic
“ signs of fibrous tissue. No liquid escaped on
“ pressure, however strong,—no cancerous fluid.
“ On dissection they were found to be composed
“ of a multitude of granulations closely pressed
“ against each other, sometimes adherent, at
“ other times free of adherence ; the mamma
“ was partly atrophied. Finally, a fourth very
“ small fibrous tumour existed, perfectly isolated
“ from the surrounding parts. The right mam-
“ mary gland had nearly disappeared ; in its
“ stead I found a large fibrous tumour, divided
“ into lobules, which were subdivided into
“ granulations. Pus had accumulated between
“ the pectoralis major and the swelling ; besides
“ this, a collection of pus existed between the
“ lobules of the tumour.

“ These are the clinical and anatomo-patho-
“ logical facts to which I desire drawing the
“ attention of the Academy, and by which I
“ consider myself authorized to conclude.

“ 1°, That the mammæ are exposed to the
“ development of the organic production known
“ under the name of *fibrous tumours*.

“ 2°, That fibrous tumours of the mammæ,
“ one of the most common lesions to which these
“ organs are exposed, may be distinguished by
“ certain signs from chronic induration consecu-
“ tive to chronic inflammation, and from can-
“ cerous tumours ; as in both these disorders
“ the tumour is not separated from the mam-
“ mary gland, in whose tissue they develope
“ themselves, and from which they offer no
“ line of demarcation. Fibrous tumours, on
“ the contrary, are quite separate from that
“ gland, and roll under pressure of the finger
“ in the the same way as a cyst, or a lymphatic
“ gland.

“ 3°, That fibrous tumours never degenerate
“ into cancer ; consequently their extirpation
“ is not requisite on account of the changes
“ which may take place in their tissue, and by
“ which the life of the patient may be endan-
“ gered. Fibrous tumours form a lesion en-
“ tirely local ; their extirpation is therefore to a
“ certain degree optional, and ought never to
“ be performed, except when from their size
“ or their weight they inconvenience the
“ patient.

“ 4°, That when extirpated, they never relapse
“ in the mode in which a cancer does ; although

“ other fibrous tumours may develop themselves in a breast from which one has already been extirpated.”*

CARTILAGINOUS AND OSSIFIC TUMOURS.—Sir Astley Cooper stated that these tumours were the consequence of chronic and specific inflammation of the breast, during which a gelatine is effused resembling that in which bone is formed in the foetus. But the formation of bone in the foetus is not an inflammatory process. He supposed that blood-vessels and absorbents entered the effused gelatine from the adjoining parts ; and as the latter removed portions of it, the former deposited the ossific matter in the interstices. Every part of the human body, cartilage, muscles, membrane, arteries, &c., have a propensity to become bone, so that after a tumour has been produced it may assume the same tendency, and become converted into portions of ossific matter, cartilage being at first formed, the quantity of bony matter increasing in proportion to the time the swelling has existed. Encysted tumours, or those tumours with a circumscribed cyst, or an irregular cyst with septa or cells, may be first formed, and the cysts take on an ossific form, by nuclei of

* Medical Times, April 6, 1844.

bone being at first formed in the same way as the bones of the skull in the foetus take their rudimentary origin. These nuclei gradually increase, until the whole cyst becomes completely bone ; the outer side of which may be smooth or uneven, adapting itself to the part which contains it. There are some specimens in my collection in the Museum at the Middlesex Hospital which exemplify this observation. A tumour, at first fibrous, may, by the deposition of cartilaginous matter, and then of an ossific deposit, be converted into bone, and thus change its character. So may other tumours situated in the breast become changed in the same manner. A tumour having ceased to increase, nature forms a sheath for it, thus preventing it from irritating the adjacent parts, or affecting the constitution in any way, unless indeed, some filaments of a nerve, or even a larger branch becomes accidentally invested, or in a manner attached to it ; but if this be not the case, the tumour may remain for a very long time, nay, during the latter part of the life of the patient, without causing the least inconvenience. Should the patient suffer any pain, it will be advisable to remove

the tumour. Little or no danger will result ; and when the mind has been harassed by the existence of the swelling, it will be as well to recommend the operation, as its removal will render the patient comfortable, and free from any anxiety on the score of the swelling being in any way cancerous.

ENCYSTED TUMOURS.—Tumours are termed encysted on account of being surrounded by a sheath or cyst, which contain different fluids or substances, in certain parts where fat predominates. The contents are fat, and this tumour has been termed a steatoma. Sometimes the cyst contains a fluid like honey, called meliceris, and sometimes its contents are like pap, when it has been termed atheroma ; but these kinds of tumours are generally situated in other parts of the body. The more frequent of these that occur in the mammary gland is the fatty, which has already been described. Sometimes an encysted tumour of the breast may contain a firm kernel-like substance, somewhat approaching the structure of an enlarged lymphatic gland, but whiter in its colour and denser in its texture. A tumour of this kind I removed a short time since from the breast

of a lady. It was quite moveable in every direction, and the only inconvenience that it caused the patient was, when pressed against the glandular structure of the breast by the stay or any accidental touch. She had a great desire to have it removed.

There are other varieties of this tumour in respect to the contents of the sac, which sometimes contains a cheesy matter or an earthy substance. It has been stated that sometimes these tumours of the breast contain a hairy substance; and some little time since an account appeared in one of the medical journals of a case where an encysted tumour of the breast was removed, and where the cyst contained a quantity of foetal bones and hard substance, that is occasionally found in the ovary or fallopian tube, in cases of extra-uterine-foetation.

Encysted tumours of the breast frequently remain stationary for months, or even years, without causing the patient either inconvenience or uneasiness, and are less troublesome as age advances than at an earlier period of life. External, or even internal remedies tend to produce little, if any, effect upon them; and the

only remedy that is sure to prove effectual in their cure, is their removal, with a careful dissection of the whole of the cyst; for if any portion of the outer wall remains there will be a chance of the tumour returning; but if the whole of it be carefully removed there is little fear of its reappearance. It is said that encysted tumours are hereditary, and cases are on record where encysted tumours of the head have occurred in two or three generations; but I am not aware that such cases have occurred in the breast.

Sir Benjamin Brodie remarked, in a clinical lecture delivered at St. George's Hospital:—*

“ Sometimes in cutting into a mammary encysted tumour you find that the fluid, instead of being clear like water, has the appearance of dark brown turbid serum, containing much coagulable matter. In these cases there is generally in addition to the cysts, more or less of solid substance, approaching to the character of a malignant disease. I do not mean that it is actually carcinoma; in fact it is less liable to return after it has been removed

* *Lancet*, p. 26. Vol. XV. October 4, 1834.

“ than carcinoma, but still if left to itself it
“ runs the course of a malignant tumour, and
“ is incurable except by operation. The species
“ of mammary encysted tumour, in which there
“ is merely a thin cyst, containing nearly pure
“ water, is altogether independent of malignant
“ disease. If, after puncturing one of the cysts
“ and letting out the fluid which it contains,
“ you do nothing more, you will find that when
“ the wound heals, the cyst again fills. But
“ if you dissect it out, taking care to leave none
“ of the cyst behind, there will be no return of
“ the disease. Sometimes stimulating applica-
“ tions will succeed in effecting a speedy and a
“ permanent cure, so that an operation may be
“ avoided. I have known this to happen in
“ more than one instance. A lady having one
“ of these encysted tumours of the breast, con-
“ sulted me. It was as large as a small orange.
“ I punctured it and drew off a considerable
“ quantity of clear watery fluid. The wound
“ healed up, and the cyst again filled. I then
“ advised her to have the tumour removed
“ by excision. She made no objection, but re-
“ quested me, for certain reasons, to defer the
“ operation for a fortnight or three weeks.

“ This being settled, I advised her in the mean-
“ time to apply to the breast an embrocation
“ which was much used by Sir Everard Home,
“ and as I believe before him by Mr. Pott, and
“ which I have found of so much service that
“ I will give you the prescription. It consists of
“ proof spirits and camphorated spirits, of each
“ three ounces and a half, goulard extract one
“ ounce. A flannel is to be dipped in
“ this, and to be applied to the part several
“ times daily, being allowed to remain
“ there. Well, then, to return to my case : this
“ treatment was followed for three weeks, at
“ the end of which time the lady said she was
“ quite prepared for the operation. But now,
“ on examining the breast, I found that the
“ tumour had altogether disappeared. This
“ case is the more interesting, inasmuch as the
“ tumour was of a large size. Exactly the same
“ thing happened in another case of mammary
“ encysted tumour for which I proposed the
“ operation, and which differed from the last
“ only in being somewhat smaller in size. I
“ do not mean to say that in all cases the embrocation
“ will succeed, but it never does
“ harm, and has succeeded quite often enough to
“ entitle it to a fair trial before resorting to

“ excision. Probably some other stimulating
 “ application would answer the same purpose.”*

CYSTIC AND HYDATID TUMOURS OF THE BREAST.—Tumours of this description have been described by Sir A. Cooper, M. Velpeau, Dr. Warren, and Dr. Cumin. The first of these writers has described four varieties of hydatid diseases of this organ, three of which he considers not to be malignant, the fourth to be malignant. A more correct division would be into those consisting, first, of serous cysts; and, secondly, of true hydatids; and it is not improbable that the former may assume various forms, or be variously altered as respects the character and number of the cysts, the appearance of their coats, and the nature of their contents, in the progress of their growth, and by peculiarities and changes in the patient's constitution and health. Indeed any one of them may assume the cancerous or malignant character, owing to these circumstances.

“ Cystic tumours vary remarkably, not only
 “ as respects the number and size of the cysts
 “ forming the tumours, but as respects the num-
 “ ber and appearance of these tumours, and the
 “ nature of their contents. Some of these tu-

* London Medical Gazette, Vol. XV., p. 27.

“mours present one large cyst, with various
 “partitions ; others consist of several cysts,
 “more or less distinct ; others, again, are formed
 “of several consecutive tumours ; some contain
 “a sero-mucous fluid ; others a sero-sanguineous
 “liquid.”

“Sir Astley Cooper described as follows his
 “first species of tumours, consisting of simple se-
 “rous cysts or bags. In this form of disease the
 “breast gradually swells, and is at first free from
 “pain and tenderness. It becomes hard without
 “fluctuation, and grows slowly for months, or
 “even years, sometimes acquiring a very con-
 “siderable size. At an early stage the swell-
 “ing feels entirely solid, and greatly resembles
 “a simple chronic enlargement of the breast ;
 “but after a great length of time, fluctuation
 “may be felt at one part of it. The tumour
 “then begins to increase more rapidly, and
 “fluctuation may soon be detected in several
 “parts. There is still in most cases little or
 “no pain ; some patients, however, feel an un-
 “usual heat in the part, and others experience
 “pain in the breast and shoulder. The tumour
 “is extremely moveable on the pectoral muscle,
 “and is very pendulous. In some cases the

“ whole of the mammary gland becomes in-
 “ volved : in others only a small portion of it.
 “ Such tumours often attain a very considerable
 “ size : Sir Astley Cooper stated that the largest
 “ he ever saw weighed nine pounds ; but that
 “ in other cases, although the diseased breast
 “ was entirely filled with cysts, it never exceeded
 “ twice the size of the healthy one. At length
 “ one of the fluctuating portions slowly inflames,
 “ ulcerates, and discharges a large quantity of
 “ a fluid resembling serum, but somewhat more
 “ glairy. If the sac be entirely emptied, and
 “ the external opening closed, it is a long time
 “ before the fluid accumulates, and occasionally
 “ the sac is obliterated by the adhesion of its
 “ sides. Sometimes several cysts burst in suc-
 “ cession, at distant periods, forming sinuses
 “ which are very difficult to heal. Except during
 “ the process of ulceration, the general health
 “ is not at all disturbed. Even when the tu-
 “ mour is large, ulcerated, and discharging pro-
 “ fusely, the axillary glands remain unaffected ;
 “ or, if one be slightly enlarged, it is from simple
 “ irritation, and the enlargement subsides when
 “ the disease in the breast is removed.”

“ The second species of cystic tumour de-

“ scribed by Sir Astley Cooper seems hardly
 “ entitled to rank as such, since it was formed
 “ on a single case, and a doubt was expressed
 “ whether this might not have been of the nature
 “ of the globular or true hydatid. It is represented
 “ as undistinguishable from the preceding species
 “ except by dissection. In the case examined by
 “ Sir Astley Cooper the tumour consisted of vast
 “ numbers of cystic formations, the largest of
 “ which did not exceed the size of a barleycorn.
 “ They were oval and composed of numerous
 “ lamellæ, which could be peeled from each
 “ other and which were very vascular.”

“ The true globular hydatid tumour, the
 “ third species of hydatid tumour of Sir Astley
 “ Cooper, is similar to hydatid productions in
 “ other parts of the body. Sir A. had found the
 “ globular hydatid only to exist singly in
 “ the breast, although great numbers are found
 “ congregated in other parts. When one of
 “ these hydatids is developed in the breast in-
 “ flammation is excited, and a wall of fibrine
 “ surrounds it. The tumour feels hard, and
 “ while it is small no fluctuation is perceptible ;
 “ but as it increases, and the fluid becomes more
 “ abundant, a fluctuation may be felt in the

“ centre of the tumour. Sometimes, when the
 “ hydatid has attained a considerable size, it
 “ occasions suppurations, and the cyst being
 “ discharged along with the matter a spontaneous
 “ cure is effected.”*

According to the accounts already detailed, it would be apparent that hydatid affections of the breast are not frequently malignant; but still there is another class which must be included with cancer, fungus hæmatodes, or encephaloid disease. A case of this kind came under my notice about two years since. A lady had a tumour appear in the left breast, which was declared to be hydatid. It was first discovered three years previously, and did not increase much in size until nine months afterwards, when the whole breast began to inflame and enlarge; the glands became swollen and painful in the arm-pit and over the collar-bone, and in a few months afterwards the breast ulcerated at one part, and a small cyst was emptied. Other cysts now broke in other places; and when I was called in to see the patient, the breast was greatly enlarged, had numerous deep-seated and other superficial ul-

* Copland's Dictionary of Practical Medicine, p. 281.

cerations at different parts of it, extending in a direction from its under and inner border, to a great depth into the axilla. The pain she suffered was excruciating, and large doses of opium, from sixteen to twenty grains two or three times repeated, alone relieved some portion of the pain for a short period. The disease rapidly progressed until at last death ended her sufferings.

In the first stage cystic and hydatid tumours of the breast may be mistaken for chronic inflammation, but may be distinguished from it by the absence of pain, and the health of the patient not suffering. They may be detected from scirrhus by the absence of the strong hardness and lancinating pains, by their pendulous state and free motion in every direction over the pectoral muscle.

If there be only one large cyst, the fluid may be evacuated by a puncture, and in some instances it will not again accumulate, but in others it will, when it may be again emptied, and if it has any disposition to increase, or shows any inflammatory action, the usual means for such treatment must be had recourse to, when it may be necessary to remove it. When the patient is under great apprehension of malignant disease, or when the enlargement is

excessive, and the cysts numerous, the whole of the swelling should be removed ; taking care not to allow any portion of the cyst to remain, as that would be likely to produce a return of the disease.

Some years since a large tumour that had been removed from the breast of a patient, was brought to me by one of the pupils attending my lectures in Little Windmill Street. It was as large as a cocoa-nut. When examined it consisted of a very thick elastic outer wall, which contained numerous hydatid cysts, varying very considerably in size, some being extremely small, others much larger. I am not aware of the history of the case, but such hydatid tumours are rare in this situation, though I have frequently seen them in the liver in many of the bodies that I have examined.

PANCREATIC SARCOMA.—This affection sometimes attacks the breast. It consists of a structure resembling the pancreas, and usually commences on the outer part of the nipple, and gradually increases towards the axilla, either directly or in an irregular manner ; it does not grow to a very large size, and when indolent the glands in the axilla are not affected. Sometimes the patient suffers from lancinating pain,

and the skin over the swelling occasionally becomes irritable and inflamed. The inflammatory action is of an erysipelatous character, accompanied by constitutional febrile disturbance. The skin often adheres to the glandular structure of the breast very firmly in this kind of tumour, and if the tumour is uncontrolled, and of an active form, some of the glands in the axilla become affected, which are at first painful, tender, and swollen, and afterwards become indurated, when the glands above the clavicle may become similarly affected. Lizars says, "It is a benign tumour, and may be left alone until pain takes place, when it should be removed by the knife." In the treatment of this tumour the constitution must be attentively watched, and all inflammatory action subdued; and then, if the glands in the axilla are not too much affected by the continuance of the disease, or by the rapid progress it has made, an opportunity may be taken to remove the morbid structure. All applications that are in the least irritable to the skin should be strictly avoided, or otherwise a painful inflammatory action may be set up, which will considerably affect the constitution of the patient. Leeches should not be recommended, as they are very

likely to produce the ill consequences already mentioned.

CLASS III.

ORGANIC LESION.—TUMOURS OR FORMATIONS OF A MALIGNANT AND CONTAMINATING NATURE.

We have been induced to make malignant disease of the breast a distinct class, although sometimes these affections commence in the form of other diseases, and afterwards generate into a malignant character; but notwithstanding this difficulty, we have thought it prudent to keep malignant disease separate. It is only within a short time that we have so far advanced in our scientific inquiries as to arrange malignant disease into different forms. Scirrhus and cancer only were formerly known, and although the same diseases were then in existence as at this period, the different species all came under scirrhus or cancerous affections; we are indebted for our present knowledge to the unwearied exertions and scientific inquiries of Adams, Abernethy, Baillie, Bell, Bayle and Cayol, Breschet and Ferrus, Burns, Carswell,

Cruveilhier, Cooper, Hodgkin, Home, Müller, Laennec, Scarpa, Travers, Wardrop, and several others, who have thrown fresh light upon our knowledge of the anatomical structure of cancerous diseases, by which we are enabled to arrange them according to the nature of their more particular minute morbid development; and we shall consider under this class of disease

Scirrhus . . . Carcinoma simplex.

Cancer, fungus hæmatodes, medullary sarcoma, and melanosis.	{ Carcinoma reticulare.
	{ Carcinoma alveolare.
	{ Carcinoma medullare.
	{ Carcinoma melanodes.
	{ Carcinoma fasciculatum.

Before we enter upon the several divisions of malignant disease, we shall make a few remarks which will apply generally to the various diseases under our consideration.

The changes in the structure of the mammary gland itself during the different periods of life, constitute a subject of some importance, not only in regard to its general anatomy, but also to the existence of diseased structure, as it would be apparent that during certain periods disease attacks the glandular structure, and not its surrounding tissues; that its progress

must be more rapid when the gland is in a high state of vascularity than when it is in an inactive condition. It becomes important, therefore, thoroughly to investigate the condition of the gland when affected by any deranged condition.

The gland itself being the seat of disease, either of a slow character or of a malignant form, will thus necessarily progress more at one time than another. All remedies applied to alleviate the affection during such time, will not take the same effect as they would when used on other occasions. The remedies therefore should not be looked upon as unavailable or ineffectual, for these changes in the condition of the breast ought to be carefully considered.

These observations may also be applicable when the seat of disease is not in the glandular structure itself, for it must be considered, that during certain periods the surrounding vascular texture and tissues must be in a more active state than at others: for example; when the lymphatic vessels are in a state of activity, they frequently become enlarged and painful, but their increased size soon diminishes when the cause of their activity ceases, and then they become less vascular and more

at rest. During lactation these vessels are in a constant state of action, for a greater secretion taking place, they frequently convey into the system the quantity of milk not consumed by the infant; and suppose they become inert or are incapable of accomplishing the absorption of the increased quantity of milk secreted, its presence will produce pain, inflammation, and other serious consequences, and the changes of the structure of the lymphatic vessels are more likely to take place during this period of useful employment than when they are inactive. The change, of course, is in the structure of the lymphatic vessels and glands, the tunics entering into the formation of these pellucid tubes, or their attendant glands.

Affection of these glands, viz.—the lymphatic glands of the breast, may be of several kinds, and depend upon various causes, such as constitution, habits of life, periodical changes, abraded surface, exciting causes, irritation of the adjacent skin, pressure, external violence, &c. and may be of an inflammatory character, (either acute or chronic,) of a slow strumous change, either of one or more of the glands which may terminate in scirrhus, cancer, or fungoid disease,

and the treatment of each dependent solely upon clearly and satisfactorily comprehending the exciting cause and examining the structure of the affected part ; the remedies for each being of a different character.

To exemplify these observations, the following remarks may be brought forward :—The pressure of a bone in the stay may be constantly placed at one part of the skin, irritating, or perhaps at last producing an excoriation of a small surface. One or more of the lymphatic glands covering the mammary organ may become enlarged and painful, both to the touch and otherwise, the cause being the pressure, which, upon removal, and the excoriated part (if existing) suffered to heal, the enlargement of the gland would gradually subside, with little treatment but the removal of the cause ; this of course is only applicable to constitutions not predisposed to disease, where a malignant diathesis is not existing. A blow may produce inflammation, and some of the glands, either in the axilla or in the structure of the breast, may become enlarged, which would subside when the inflammatory action has terminated, by the aid of proper agents, or even run into a suppurative form. Too numerous are the cases

that could be brought forward to prove the truth of these remarks ; but it must be manifest to all, without entering into considerable detail.

A gland may remain enlarged for a long time and escape notice, when, upon accidentally feeling it, the patient's attention is directed to it, and frequently the mind becomes anxious and watchful lest it should prove to be cancer. The patient is frequently examining the swelling, and thus, by repeatedly irritating the gland, it becomes more painful, enlarged, and inconvenient. The patient, almost in a state of wild anxiety, seeks the aid of surgical assistance, when the mind being rendered composed by the opinion given, which is duly appreciated by her, the irritating cause of the increase in the tumour being discontinued, the swelling will most frequently yield to the proper agents employed, and the cure be accomplished.

Cancer may take its seat in several structures. The skin may be affected, and the primary situation be in the sebaceous follicles, or the small glands, those of a lymphatic kind may partake of the disease ; the cellular tissue connecting the component parts of the mammary gland may be the original seat of the disease. The mammary gland itself may be affected with

cancer, and it may progress from either of these situations until all the several parts are implicated, and it becomes then very difficult to distinguish the original or primary situation of the affection. The glands in the axilla will at last become affected by this malignant disease, and white, fibrous cords will pass in a radiated manner, which will all gradually converge towards the arm-pit. These cords are perhaps lymphatic vessels, but still they lose their character, being changed in their texture, with little or no appearance of having any vascular structure. The glands being affected by the disease, the arm itself becomes swollen and enlarged, and the motion used by exercise, or even slight voluntary action in performing the ordinary movements so necessary for our own assistance, only tends to increase its size and renders the complaint the more irksome and obnoxious to the patient; the mind, the feelings, are distressed; the countenance indicates to its beholder an anxiety, an inward suffering, more easily recognized than described, and well known to the practical observer of this most formidable and distressing complaint.

The lancinating pains felt in the seat of the

complaint, with its increasing ravages, the loss of sleep, restlessness, numbness of the arm, the breast becoming more enlarged and painful, the whole of the neighbouring parts as it were entering into its destructive character, indicate the nature, the true form, of this most formidable disease.

When the glands in the axilla and in the neck above the centre of the clavicle become implicated in the disease, and when they are fixed to the deeper-seated parts, so as to be immoveable upon the application of pressure, and motion in a lateral direction, little can be done in regard to any surgical operation, because it is impossible in many cases to remove these enlarged glands ; and as they have taken up the disease, the removal of the original tumour would only be the removal of a part of the diseased structure, while some of it yet remained, which would still have an action of a malignant nature upon the constitution.

In those cases, however, where the disease has progressed uncontrolled, and where the patient suffers from the general accompanying symptoms of the complaint, beneficial results will follow the exhibition of such remedies as have a soothing and sedative effect, and by

these means the patient's sufferings will be diminished, and consequently life prolonged.

Carcinoma has frequently one fixed point at the commencement of the disease; and this gradually, and as it were imperceptibly, increases, until it has acquired a certain size, varying considerably in different cases. When it has formed a sufficient nucleus, the disease increases in its growth from this point, extending in all directions in a radiated manner from one central spot to the surrounding and adjacent parts. At first, the carcinomatous spot is small, and the spreading rather short and fibrous, but as the disease extends its ravages, the centre becomes harder, the radiated fibres firmer and more cord-like, and in this insinuating course the disease extends to a more advanced stage. At first, the whole mass is moveable, but it ultimately becomes fixed, by the surrounding fibres extending between the adjacent muscles, or to the neighbouring glands and deeper seated structures of the frame. Although the disease advances, the size of the breast does not always increase, for, on the contrary, frequently the affected breast will be the smaller of the two, for as the disease

increases the glandular texture of the breast diminishes, and the surrounding adipose structure becomes absorbed. The skin in these cases mostly becomes corrugated, and the nipple frequently diminishes in size and retracts: sometimes the side where the disease is situated is the part that it retracts the most; but this is not invariably the case, nor can even the retraction of the nipple be looked upon as always accompanying the disease.

Carcinoma may be either occult or ulcerated; the former may be the commencement of the latter, which afterwards passes into an ulcerated state. The disease may be either indolent or active in its progress; the first remaining in the same condition or advancing but slowly, the latter extending its destructive character to the more minute and delicate texture of the breast, destroying by its ravages all it meets, progressing uncontrolled, and by its malignant tendency stealing on, in the system, until at last life itself becomes extinct, and then, and only then, the disease ceases in its destructive and malignant nature.

THE EFFECT OF CLIMATE ON CANCER AND ON DISEASES OF THE BREAST.—Sir Astley Cooper

stated that climate had no influence upon diseases of the breast, and quoted a case where a patient went to Trinidad, after having been operated on in this country for a scirrhus. When she left the wound had healed. Soon after reaching Trinidad the tumour returned, and the glands in the axilla became enlarged. She was brought back to England, with her constitution extremely debilitated. At the time of her return it was winter; she soon sank and died. It has been acknowledged that the temperature of a place influences not only the organization, but also the diseases of the inhabitants, and therefore we conceive that temperature has and must have some effect in the progress and development of cancerous disease; but, of course, will have less influence when the disease has already made its appearance in some part of the body, than in those constitutions where there is only hereditary predisposition to the disease; but where it has not made its appearance, it becomes a question of great consideration what influence temperature would have upon preventing or retarding the progress of the disease; and we are inclined to believe that it might have some beneficial effect, but we are

not prepared to point out the extent in respect to its development. We see that when the disease attacks an internal organ, that its progress is much slower than when it is situated superficially; and we will take for example the uterus when affected by cancer. Observation has most decidedly pointed out that the disease is less destructive when it affects that organ than when it makes its appearance in the breast, and where it is more exposed to the atmosphere. This practical observation has led to the application of wool or wadding to the breast, to protect it from the influence of the air.

“ The intensity of the *solar beams*, and consequently of *light* in warm countries, is very influential in modifying not only the vegetable and animal creation which inhabit them, but also many of the physical phenomena which contribute to the constitution of their climate. It would seem as if the solar beams were decomposed by the soil and its products, and whilst furnishing heat and light to objects upon the surface of the earth, served to supply or to replace the locomotive electricity, which is constantly circulating through and actuating, not only the crust of the globe,

“ but also the vegetable and animal creations
“ which cover it ; passing thence, at last, into
“ the atmosphere. Observation has clearly shown
“ that electrical phenomena are most energetic
“ and of most frequent occurrence, in countries
“ and in seasons in which the solar influence
“ is the greatest ; and that while dryness of
“ the atmosphere causes its accumulation in
“ objects placed on the surface of the globe,
“ a moist state of the air favours its passage
“ thence, and its excessive increase in the clouds
“ giving rise to various meteorological phe-
“ nomena. In a dry atmosphere, particularly
“ in inland districts, thunder and lightning,—
“ the more violent electrical charges occurring
“ in this fluid,—do not take place ; whilst vege-
“ tables and animals, as well as other bodies
“ placed on the earth’s surface, are more than
“ usually charged with electricity ; whereas, in
“ a warm and moist atmosphere, especially
“ in maritime or insular situations within the
“ tropics, these phenomena are very frequent,
“ and the electricity is rapidly carried off from
“ the earth.”*

Now, surely in those countries “ where ani-

* Copland’s Dictionary, (article Climate,) p. 339.

“ mals are more than usually charged with “ electricity,” the body must be in a more healthy state than when there is less electrical fluid in the system ; for life and health depends upon the nervous system, which is greatly influenced by electricity, and this agent, in some cases, enables us to restore life and health, even when the body has ceased to exist from the effects of poison, and even other causes. Some years since I performed the following experiment :—Two rabbits were inoculated with points charged with the upas poison. A few minutes afterwards both were attacked with convulsions, and soon lay lifeless upon the ground. Between a quarter of an hour and twenty minutes afterwards electricity was applied to one of the rabbits, commencing by passing the electric shock up the extremities, and afterwards along the course of the spine, from the tail towards the head ; at the end of about seven minutes, the animal began to show symptoms of life, and very soon began to move about the table, and at the end of ten minutes became perfectly restored to life. This rabbit was kept in my possession for six weeks ; it remained perfectly well during the whole of that time.

The other which was not electrified died. This experiment was repeated several times, and generally with the same result.

It may be well for us to consult the opinions of other authors on effect of climate, as those constitutions predisposed to cancer might find a great consolation in visiting those countries where there is a chance of the disease not making its appearance. From the authority of Sir Everard Home we quote, “ that climate and constitution have a considerable part in such tumours being formed, I need only mention, that in the island of Otaheite, and those in its neighbourhood, fighting among themselves is the common mode of deciding the quarrels of the women. The blows are principally aimed at the breast, which has no defence, and cancer has never been met with in these countries.”* If we trace one of the causes which produce the appearance of cancer, we find that many of the patients that present themselves for our advice, attribute the appearance of the tumour to a blow, or some injury upon the part where the swelling has made its appearance ;

* Sir Everard Home on the Formation of Tumours, p. 31.
Published 1830.

and it has already been clearly pointed out, that cancerous disease alone is developed when there is some peculiar predisposition to that disease in the constitution, and that it may be excited by external violence. Now, the non-appearance of the disease at the island of Otaheite, must prove that in that country the females have no such peculiarity of constitution to produce cancer, that climate must have some considerable influence upon the appearance of the disease.

“ The influence of temperature and of climate generally, of food, and of the occupations and habits of life, has been frequently made the subject of inquiry, both by medical and physiological writers, but without our being able to arrive at any very precise results. It would seem, however, to be pretty clearly established, that the same animal, when suffered to live at large in different countries, acquires different characters, and we can often perceive that the character which it has acquired is peculiarly well adapted for its new situation. We are, however, for the most part, altogether unable to assign any probable cause for this alteration, and we

“ refer it to the effect of climate and diet,
“ merely because we know of no others which
“ can be supposed to operate.* One of the
“ most remarkable examples of the influence
“ of external circumstances, upon both the
“ physical and intellectual powers is the produc-
“ tion of what is termed cretinism in certain
“ parts of Switzerland. It consists in a state of
“ mental imbecility, combined with, and proba-
“ bly depending upon, a mal-conformation of
“ the bones of the head ; it appears to be gene-
“ rated by something peculiar to the atmosphere
“ of confined valleys, and does not seem to be
“ hereditary.”† This is an opinion from an
authority of the highest standing, that animals
acquire different characters according to the
countries wherein they reside, which is attributed
to climate and diet ; now surely if they acquire
the character of that country, they must also
acquire the diseases peculiar to it, and must, to
an extent which is difficult to point out, lose
the tendency to the production of a disease
which would make its appearance under other

* Prichard's Researches, b. 9. ch. i. sect. 7.

† Saussure, Voyages dans les Alps. Bostock's Physiology, p. 800.

circumstances. The constant change that is daily taking place in the animal structure must be influenced by climate and diet, and this is most clearly pointed out by the appearance of cretinism in certain parts of Switzerland, as exemplified in the previous extract. That disease is peculiar to certain countries there can be little doubt, or that the body is subject to certain deposits when residing in particular districts is also most certain. We see in Derbyshire, as well as in other localities, that bronchocele is extremely prevalent, the cause of which at present is not generally understood. In other districts the formation of stone is most frequent. Struma, phthisis, and numerous other complaints are most common in this country, and are very rare in some foreign districts, whilst other complaints are frequent in their occurrence there, and which we are almost unacquainted with here. Many complaints are cured and considerably influenced by change of air, climate, and diet ; and why should cancer be uninfluenced by the very means that remove other diseases ? Why cannot that peculiar state of the constitution which has been stated to exist in those that are to be affected by cancer, be changed, altered,

or amended by the influence of climate, district, diet, mode of life, employment, &c.? These different changes must influence, even to some extent, the appearance of the disease; grief, affliction, the anxious watching of a mother over her child, has been attributed as a cause of the disease, and yet climate and temperature, which influences animal life, has been set down as perfectly uninfluential in the appearance or progress of this disease: it is a subject of the greatest interest, and one that requires very minute investigation.

SCIRRHUS, OR CARCINOMA SIMPLEX.—This term may be here restricted to the induration which precedes cancer in the ulcerated state, although formerly this term was only applied to those tumours which were hard, circumscribed indurations, regular and even in their surface; and cancer applied to those swellings that were irregular in their surrounding texture, and sent off flocculent prolongations in a radiated manner, springing from the central hardened mass.

Scirrhus tumours are hard indurated masses, generally situated on the axillary side of the nipple. Sometimes above it, and almost always producing retraction of the nipple, which

in some cases is well marked, in others not so distinctly. In the crude state it most resembles hog's skin, and in consistence is between it and the intervertebral substance. It is white, grey, or bluish, semi-transparent, sometimes colourless, or very slightly coloured. It is divided occasionally into irregular homogeneous masses, subdivided into lobules, united together by fibrous bands of dense cellular texture, presenting a regular radiated or alveolar appearance, and when cut into, represents the character of the interior of a turnip. The scalpel, as it cuts through it, grates upon the surface as if it were cartilaginous. In a softer state the consistence occasionally has an appearance of a semi-transparent, dirty grey, thick lymph, at other times it resembles meat-jelly, honey, or gum, tinged with blood, and contains sometimes a pultaceous mass.

“ True scirrhus is the product of an ever-
“ working morbid cause ; of an activity display-
“ ing itself in the formation of diseased struc-
“ ture ; of a peculiar dyscrasia, which, unlike
“ the inflammatory process, is not limited in its
“ duration to a certain period of days or weeks.
“ It is a chronic disease, and when once es-

“ tablished contains within itself the principle
“ of its further development.”

“ This opinion is quite supported by minute ex-
“ amination. Not merely does carcinoma simplex,
“ or scirrhus develope itself without inflamma-
“ tion, but its structure differs from the very first
“ from that of simple induration. Exuded fibrine
“ always has the same appearance, whether it
“ forms false membranes on the surface of organs,
“ or whether it is deposited in their tissue so
“ as to cause induration. Recent exudations do,
“ indeed, contain small globules, but no cellular
“ globules with germs of new cellules.”*

It does, however, appear doubtful whether we are warranted in laying down so positively, as is here done, by Professor Müller, the distinction between carcinoma and induration. Dr. Henle remarks on this subject, [that fibrinous exudations contain not merely globules, but also cells, which though not furnished with germs of young cellules, contain the characteristic nuclei, and at an early period become elongated, and transformed into fibres of cellular tissue, such as constitute the cicatrices of ulcers, &c.

* Müller on Cancer and Morbid Growths, p. 79.

Thus then it would appear that a scirrhus once formed can remain or increase, having within itself the means of reproduction, and that the period may vary and be dependent on no fixed time, that it is a peculiar dyscrasia dependent upon constitutional causes or some imperfection in the blood. Now, how was this growth first produced?—how nourished? The answer is simple. It was first produced by the blood, and nourished by the blood circulating through its structure. Thus then the blood had the power of first producing it, and increasing it, and therefore has the power, if the morbid property is still inherent in it, of producing fresh growth. No doubt, by its formation there is a greater tendency to increase, particularly as the healthy state of the natural structure has become morbidly affected, and thus then the system generally has become more impaired, and less capable of performing the functions necessary to life and health. The system therefore gradually sinks into a state which increases the diseased condition. Nature, ever active in the repair of every part of the animal economy, would appear to be in this instance dormant; or is the production of scirrhus an effort of

her all-wise laws, to rid the blood, by the deposit of a morbid habit, that would cause, if remaining in it and circulating through the system generally more mischief than the mere production of the scirrhus? and thus, then, if this hypothesis be correct, the formation of scirrhus must be looked upon as an effort of nature to free the blood of something obnoxious to the healthy state of the system, to prevent it being diffused to a greater extent. If so, it should be the object of the surgeon to remove without delay the tumour, and thus he would be assisting her in the effort of getting rid of the deposit, which if left must increase, and if removed in time be of the greatest benefit to the system. But unfortunately it has been proved, without any doubt, that cancer when removed frequently only diminishes for a time the development of this disease; that later in life it again makes its appearance; but at the same time the most sanguine have fully made up their minds, that the removal of a scirrhus tumour prolongs life for a given period, and the sooner the swelling is removed, the longer the period before the disease makes its appearance.

“ Before the discovery of medullary sarcoma

“ by M. Burn, and of cancer alveolaris by
 “ M. Laennec, this, the most simple species
 “ of carcinoma of the female breast, was re-
 “ garded as the only form of cancerous dege-
 “ neration.”*

“ Breschet and Ferrus† describe scirrhus as
 “ a hard white structure, resisting the knife,
 “ and composed of two different parts. The
 “ one is fibrous, firm, creaking when cut, is
 “ distinctly organised, and composed of laminæ
 “ irregularly arranged, and forming cells, in
 “ which is contained an apparently unorganized
 “ matter of a whitish, blueish, greenish, or
 “ reddish tint. This latter substance they look
 “ upon as the product of secretion. They re-
 “ mark, very justly, that the softening of scirr-
 “ hus begins sometimes in its interior, at other
 “ times from its surface.”

Sir Astley Cooper defined scirrhus as “ an
 “ excessively hard swelling, intersected by a
 “ net-work of strong fibrous bands.”

Sir Charles Bell said that “ Carcinoma
 “ consists of ligamentous bands, proceeding
 “ from a common centre, while between them

* Müller on Cancer and Morbid Growths, p. 33.

† Dict. de Médecine, Tom. iv. p. 138.

“ a matter of a whiter colour is usually deposited, though in some cases the space is occupied by cells containing a darkish fluid.”

Müller states that “ The mass of scirrhus is composed of two substances, the one fibrous, the other grey and granular. The fibrous substance is rarely apparent immediately on making a section of these growths, but is seen on scraping away the gray matter, for which it serves as a sort of basis. On removing the grey matter, either by scraping it away or by maceration, the fibrous substratum is seen to be composed of a very irregular net-work of firm bundles of fibres. The grey matter is found to consist of microscopic, formative globules, but slightly adherent to each other. These globules may be seen on examining fine sections of scirrhus with the compound microscope, or still better, by scraping out the grey matter and examining it alone. The formative globules are then seen to be transparent, hollow cellules, from 0·00048 or 0·00108 or 0·00130 of an English inch in diameter. They are insoluble in ace-

“tic acid, and also in water, at any tempera-
 “ture. In many of these cells, only a few points,
 “which look like small granules, can be seen ;
 “while in others a larger body may be distin-
 “guished, which looks like a nucleus, or like a
 “small vesicle, contained within a formative
 “globule. In many scirrhous breasts which
 “Müller examined, he was unable to convince
 “himself of the presence of smaller cellules
 “within the formative globules, while in other
 “instances their existence was distinctly recog-
 “nized. The appearance of these smaller vesi-
 “cles within the larger seems to depend on the
 “formative globules being in the state of de-
 “velopment.”*

“Though crowded closely together, the forma-
 “tive globules lie between the meshes of a fibrous
 “structure, with which they have no connexion,
 “and from which they can be easily removed,
 “while, notwithstanding the thinness of their
 “walls, they can be isolated from each other
 “with the greatest facility. It is difficult to make
 “out whether the single or double vesicular
 “corpuscule, which is often distinctly seen with-

* Müller on Morbid Growths, p. 42.

“ in the formative globule, corresponds to the
 “ nucleus of a cell, or whether it is a young cell
 “ encased within the old one. If it be a nucleus,
 “ then the small spot upon it would be analogous
 “ to the nucleolus which Schwann usually found
 “ on the nucleus of the cells in the foetus. If, on
 “ the other hand, the pale, apparently vesicular
 “ corpuscles be in reality young cellules, then
 “ the corpuscles on their surface would corres-
 “ pond to the parietal nucleus from which other
 “ cells are developed. The paleness and trans-
 “ parency of the vesicular corpuscule which
 “ may be contained within the formative glo-
 “ bule, does not by any means prove it not to
 “ be a nucleus; for in the foetal tissues the
 “ nuclei are sometimes remarkably pale, and
 “ even present a vesicular appearance. Pro-
 “ bably, however, the vesicular bodies do corres-
 “ pond to young cells, and the analogy of this
 “ structure to that of cancer alveolaris is gene-
 “ rally in favour of this supposition. In a case
 “ of carcinoma mammæ which occurred in a
 “ woman aged fifty, the same structure which
 “ was observed in the breast, and there ap-
 “ peared to contain young cellules, showed
 “ itself also in small tumours of the ribs. Since

“ many structures in the embryo are originally
“ developed from cells, there exists a general
“ resemblance between the cellular texture of
“ carcinoma and the primitive state of those
“ tissues. But this is merely a general analogy,
“ for the structure of carcinoma does not
“ resemble one tissue more than another. In
“ addition to the formative globules of carci-
“ noma, oil globules are always seen in con-
“ siderable number diffused through scirrhus
“ growths. The above described form of carci-
“ noma occurs frequently in the female breast,
“ though it is not the only variety of the disease
“ to which the term scirrhous is commonly
“ applied.”*

CANCER. —“ A disease often arising from
“ hereditary predisposition in the middle or
“ advanced periods of life, commencing with a
“ local hardness, which subsequently softens
“ in its centre, infects the adjoining parts,
“ and ultimately contaminates the frame.”—
(*Copland.*)

Cancer consists of two states or stages;
the first in which it presents the appearance

* Müller on Cancer and Morbid Growths, p. 44.

usually denominated scirrhus; the second, in which it softens, ulcerates, &c., and degenerates into true *cancer* or *carcinoma*. I shall describe each of these successively. Scirrhus stage,—occult cancer. It commences with a tumour, a limited local hardness; is usually single; is very rarely, at its commencement, detected in different parts at once; and is not surrounded by a cyst. Several authors have stated the occurrence of a cyst; but Otto more accurately excludes it from this structure. It is important to attend to the appearance of the disease at its commencement, as serving to indicate its nature. It is distinguished at this period by hardness, coldness, whiteness, or paleness, insensibility, and a deficiency of red blood vessels:—a state indicating a low grade of vital endowment of the part.

The scirrhus structure, when fully developed, consists of a firm, hard, rugged, incompressible and unequal mass, the limits of which are not distinctly defined. Its colour is generally of a light grey, and when cut into thin slices it is semi-transparent. Upon close inspection it is found to consist of two distinct substances;

the one hard, fibrous, and organized; the other soft, and apparently inorganic. The former composes the chief part of the diseased mass, and consists of septa, which are opaque, of a paler colour than the soft part, unequal in their length, breadth, and thickness, deposited in various directions, sometimes forming a nearly solid mass, in other instances a number of cells of irregular cavities, which contain the soft part. This latter is sometimes semi-transparent, of a blueish colour, and of the consistence of softened glue; at other times more opaque, softer, somewhat oleaginous, and like cream in colour and consistence.

The fibrous structure seems to be the cellular, or proper tissue of the part, in a state of induration and hypertrophy; assuming, in consequence of its increased density and bulk, an appearance similar to the fibrous or fibro-cartilaginous structure, whilst the softer portion, contained in the cells of the former, appears to be merely a morbid secretion formed only by the vessels nourishing the organized fibrous tissue, and is probably the exhalation of the part, either secreted in a modified state, or accumulated and changed by the disease of its

containing structure. If this view be correct, the former or organized parts may be considered as chiefly resulting from an altered state of nutrition in the seat of disease, whilst the latter, or unorganized portion, may be viewed as proceeding from a morbid secretion;—the diseased structure thus being a product of a disordered state of both the nutritive and secreting functions, most probably in consequence of alteration of the vital influence exerted by the ganglial nerves on the capillaries of the parts.

“ The proportion of each of those two substances and the modes of their distribution, vary very considerably in different scirrhus masses. This diversity seems to be owing to the different tissues in which they are developed, and to the modifications arising from temperament, local irritation, and various concurrent circumstances to which the patient may have been exposed. It has been attempted by Mr. Abernethy to arrange these varieties of scirrhus into species, and to designate them according to the natural structure which they most resemble. Thus he divided them into Mammary, Pancreatic, Tuberculous, &c.; but these different stages of struc-

“ ture glide so insensibly into each other, and
“ are so perfectly similar as respects their
“ origin and consequences, that little practical
“ advantage is derived from thus distinguish-
“ ing them.”

“ In some scirrhus tumours, the fibrous part
“ of their structure is both most conspicuous
“ and abundant, and is condensed into a solid
“ mass, having the appearance of a centre
“ or nucleus, whence radiate numerous septa
“ in every direction. This is the most common
“ appearance of the disease. In other instances
“ the tumour forms an uniform hard mass of
“ an irregular shape, and of no very defined
“ structure. In some cases the organized part
“ approaches more nearly to the cellular struc-
“ ture, its cells being filled with a soft matter
“ which may be pressed out. Occasionally
“ cysts are found within the tumour of various
“ sizes, containing a reddish brown, or a choco-
“ late-coloured fluid. These cysts are lined by
“ a smooth membrane, from which a fungus tu-
“ mour sometimes sprouts out. In some in-
“ stances portions of the scirrhus mass are
“ converted into a hard substance resembling
“ cartilage, in which bony or calcareous depo-

“ sitions are occasionally found. When the
“ scirrhus structure is formed in the substance
“ of a gland, its limits cannot generally be
“ accurately determined, the two structures
“ apparently being inseparably connected. In
“ some cases the scirrhus tumour condenses
“ the cellular tissue surrounding it, and hence
“ it acquires a somewhat sacculated appear-
“ ance.” (*Wardrop.*)

“ At the commencement of scirrhus disease,
“ the structure of the tissue or organ in which
“ it is seated preserves for some time its aspect
“ and colour, being changed merely in volume
“ and density. Sometimes, however, its volume
“ is but little augmented, whilst its density
“ is very much increased. As the disease ad-
“ vances, the proper tissue of the organ becomes
“ more obscure, and verges nearer to that
“ already described.”

“ Scirrhus tumours do not always remain
“ in the state now described; and the period
“ during which they thus continue is not
“ determined. When once they commence they
“ seldom retrograde, and the part affected never
“ is restored to its healthy state. It is chiefly
“ in this respect that the early stages of scirrhus

“ differ from simple induration proceeding from
“ chronic inflammation. Scirrhus may remain
“ nearly stationary for several years, occa-
“ sioning but little constitutional disturbance ;
“ but generally an important change takes
“ place in its structure, and the disease after-
“ wards makes rapid progress.”*

Such growths are termed cancerous, which when developed displace the natural texture of all tissues consisting of a degeneration in the anatomical character of the affected part, involving muscles, nerves, vessels, glands, and even bone, into a malignant form, and obliterating every trace of the normal structure ; dependent at its early stage and its progress upon some peculiar constitutional vice or condition, increasing and accelerating its growth, either rapidly or slowly, according to the diathesis then existing. Females are more prone to cancerous affections than males ; this may be accounted for by the several changes that take place at different periods of their life, at puberty and maturity, during parturition, lactation, and the decline of life, as also at the

* Copland's Dictionary of Practical Medicine, p. 284.

monthly periods; these changes influencing and affecting the constitution to a certain degree, although nature has made ample renovating means for such changes in the female system, by the process of waste and renovation not being equal. In youth, the waste is less than the increase, and females retain up to a certain age this peculiar condition of a more intense vegetative life. The increase does not cease in the female as in the male, with a complete development of all the organs of the body, so that perhaps owing to the difference in the female system, a greater renovative power is requisite for the changes already mentioned, which, under certain conditions, are not sufficient, and the habit of body sinks into a state which accelerates the appearance of malignant disease.

The deaths in Paris and its immediate environs (within a radius of five to six miles) from cancer in 1830, 668 persons were said to have died of cancerous complaints, which was 1—96 per cent. of the deaths in that year. In 1840 the number had risen to 889, or 2—4 per cent of the total mortality. In London and its environs in the year 1844 the

deaths from cancer during the first half-year averaged nine a-week ; the last half-year eight a-week ; and the total number that died of this disease during the year amounted to 589.

Dr. Todd, in a clinical lecture delivered at King's College Hospital, October 24th, 1842,* made the following remarks:—"What is the origin of cancer? I think the recent investigations into the minute structure of cancerous tumours afford some clue to a satisfactory reply to this question. If the tissues are formed from cells and nourished from cells which are developed in a blastema poured out by their vessels, may it not be reasonably assumed that the cancer cells may be produced from a morbid blastema, and that the primary tumour may be the result of some local aberration of nutrition. It is impossible to assign a satisfactory cause for this derangement of nutrition ; but it seems 'certain that organs and parts subject to frequent excitement or irritation, as the breast, the uterus, the penis, the lips, the pylorus, are often the seat of cancerous degeneration. The giving

* *Lancet*, p. 416. No. XII. December 17, 1842.

“ way of one or more blood-vessels may open
“ a passage for some of these cancerous germs
“ into the blood, which being carried to some
“ other parts of the vascular system, and meet-
“ ing with some local impediments, form nuclei
“ of new deposits. ‘ Each cell,’ as Dr. Walshe
“ has expressed it, ‘ is in itself the possible
“ ‘ embryo of a tumour.’ ”* According to this
“ view, the blood is the vehicle for the dissemi-
“ nation of the cancer, not its source, as Cru-
“ veilhier and Dr. Carswell suppose; and the
“ cause of the cancer is the local derangement
“ of nutrition, which prevents the newly-de-
“ veloped nutritive cells from undergoing their
“ normal transformations into the elementary
“ parts of the various textures. Thus, in the
“ liver, the cells as they are developed do not
“ assume the normal characters of the hydatid
“ epithelium, but are aggravated as a mass
“ of cancer, and so in other organs or tissues.”

“ The occurrence of masses of cancer in the
“ veins or even in coagula, gave some support

* Chimney-sweeper's cancer is a remarkable example of the influence of local irritation in production of disease. It is now extremely rare, owing to the improved state of the class of persons who were exposed to it.

“ to the supposition that the cancerous matter
“ was first formed in the blood. It is obvious,
“ however, that the view which assigns a local
“ origin to cancer sufficiently explains this phe-
“ nomenon, for the progress of cancerous mat-
“ ter through the sanguiferous system may be
“ arrested at various places. Cancerous matter
“ is sometimes found plugging up the excretory
“ ducts of glands, and it is sometimes found on
“ the free surface of serous membranes; it is
“ surely much more likely to be developed in
“ these situations from local causes than from a
“ taint in the blood.”

Our latest and best authority, (Müller,) states that an albuminous substance forms the basis of all carcinomatous growths; for if freed from the skin and cellular tissue, they may be boiled for eighteen or twenty-four hours, without yielding more than a very small quantity of gelatine; often, indeed, without the slightest share of it being discovered. Other authorities do not agree on this point, so that the subject still remains doubtful in respect to the chemical composition of cancer. M. Hecht, of Strasbourg, analysed a portion of fully developed scirrhus of the mamma, and found seventy-two grains

composed of two grains of ALBUMEN, twenty of GELATINE, twenty of FIBRINE, ten of a fluid fatty matter, and twenty of water and loss. He likewise analysed by a similar process, seventy-two grains of scirrhus uterus, and found it to consist of fifteen grains of GELATINE, ten of FIBRINE, ten of oily or fatty matter, and thirty-five of water and loss.* Thus, then, from the analysis of M. Hecht it appears that in the first example, out of seventy-two grains there were only two grains of ALBUMEN present, and twenty of gelatine; in the second example no portions whatever of albumen, and fifteen grains of gelatine. It is a subject of the utmost importance that we should become fully aware of the true composition of malignant disease. Organic chemistry has already enabled us to understand the nature and composition of the healthy natural tissues of the frame, and it would be a very valuable addition to become accurately acquainted with the diseased structure, as by comparison we might be enabled to apply our remedies with greater advantage, and be enabled to exhibit such chemical preparations as might counteract the morbid

* Lobstein, Anat. Path. Tom. i. p. 403.

effect produced upon the system, and perhaps be thus enabled to find out some greater relief for the treatment of disease generally.

“ Those growths may be termed cancerous
“ which destroy the natural structure of all
“ tissues, which are constitutional from their
“ very commencement, or become so in the
“ natural process of their development, and
“ which, when once they have infected the
“ constitution, if extirpated, invariably return,
“ and conduct the persons who are affected by
“ them to inevitable destruction.

“ The most invariable anatomical character
“ of carcinomatous degeneration is loss of the
“ proper tissue of the affected part, which always
“ disappears during the progress of cancer. Ves-
“ sels, muscles, nerves, glands, bones, and all other
“ tissues, how different soever from each other,
“ become alike involved in the same cancerous
“ degeneration. The first appearance of can-
“ cerous degeneration, however, does not con-
“ sist in the mere transformation of the pre-
“ viously healthy tissue, but between their
“ interstices the elementary forms of carcinoma
“ become developed, and thus displace the na-
“ tural structure. That this is the case is shown

“ by the way in which the elementary forms
“ of carcinoma are produced. It can be easily
“ proved that the germinal cells of carcinoma are
“ formed, not from any previously existing
“ fibres, but from a real *seminium morbi*, which
“ develops itself between the tissues of the
“ affected organ. This is best explained in
“ the alterations which the muscular coats of the
“ stomach undergo, from carcinoma alveolare.
“ The germinal cells of carcinoma are depo-
“ sited between the bundles of muscular fibre,
“ which in the early stages of the disease are
“ easily distinguishable : at even a later period
“ the muscular layers of the stomach, though
“ enormously swollen, may still be recognized,
“ until at length the production of the ger-
“ minal cells equally in all the coats of the
“ stomach obliterates every trace of their differ-
“ ent layers and the natural structure of the
“ organ.”*

In the present state of our knowledge, the development of cancer may be best studied in carcinoma alveolare. This contains within its cells entire generations of younger cells,

* Müller on Cancer and Morbid Growths, p. 29.

all of which (as Schwann has shown to be the case in the early growth of cartilage, and of the chorda dorsalis) are produced from cyto-blasts, which from their large size and dark yellow colour are easily distinguishable in carcinoma alveolare. The process of development of the other forms of carcinoma cannot be described with the same certainty. In carcinoma simplex and reticulare, cells are often present which contain one or two smaller transparent vesicles with a minute nucleus. Of course the appearance of the vesicles in the cells is by no means an invariable occurrence, since it depends upon the observer examining the parent cell at the moment when the young cellules are undergoing the process of development within its interior. Müller is far from supposing that the cells of carcinoma reticulare and carcinoma simplex are invariably developed in this manner from germinal cells formed within the interior of a parent cell, by the bursting or dissolution of which they are afterwards set free, for that occurrence is by no means sufficiently constant to warrant such an hypothesis. Indeed, it so frequently happens that very minute molecules, in greater or less

number form the only contents of the cells, as to lead us almost unavoidably to the conclusion that the formation of new cellules may take place external to the old cells, as easily as within their cavity. The young cellules would in this case be developed from nuclei in precisely the same manner as they are when formed within the interior of pre-existent cells. In some instances, indeed, these nuclei may have been set free by the bursting or dissolution of a large cell, but they may also be found independently of cells, and external to their cavity. This often occurs in healthy tissues ; thus, for instance, the cells of the epithelium are certainly not formed within the interior of other cells, although like others, they have their origin from a nucleus, which remains imbedded in their wall.

Softening and inflammation are the precursors of the ulcerated state of scirrhus. Sometimes they occur first at one part of the tumour, at other times at another ; but the statement that they always commence in the interior is quite unfounded, and instances to the contrary have come under Müller's notice. Often, as in the case of carcinoma mammæ, softening commences in the interior, while the surface of the tumour

is still hard, and the skin uninjured. In such a case cavities are frequently found in the interior of the growth, filled either with a moderately firm, or with a semi-fluid matter. The more consistent matter is the substance of cancer in a state of softening.* Müller ascertained this to be the case in carcinoma reticulare, and he likewise observed, some time since, that the white globules which constitute the peculiar network of that structure not merely accumulate during the process of the disease, but likewise form a main part of the disorganized mass when softening commences. The softened matter, which resembles pus in its appearance, is either contained within large or small cavities, which, in some instances, communicate with each other, or, in cancer of the mammary gland, it occupies the *lactiferous tubes* and *lymphatic vessels*, from the divided cavities of which it exudes on pressure.†

We shall next examine the views of the late Sir Everard Home, on the formation of scirrhus tumours, and he made the following statement

* Müller's Archir. fur Anatomie und Physiologie, 1836. cxxi.

† Müller on Cancer and Morbid Growths, p. 71.

in a work published in 1839 :—" If a part made
" up of glandular structure is bruised, the vessels
" composing the glands are ruptured, and throw
" out their contents ; these consist partly of the
" fluid secreted, and of those ingredients of the
" blood that are undergoing the necessary
" changes to form the peculiar secretion. In
" this case a tumour is formed, differing exceed-
" ingly from that of an aneurism in its contents ;
" in one part there are lymph globules only, form-
" ing solid masses ; in others there are similar
" masses of blood globules, with tubes of car-
" bonic acid gas passing through them, which
" become vessels filled with red blood."

" This which I have described is the structure
" of what has been hitherto denominated a
" scirrhus, and has been always considered as
" the previous stage to a true or stony cancer.
" If we analyse this structure, and trace the
" future changes the parts undergo in the pro-
" gress of a cancerous disease, I am induced to
" consider the serum and lymph globules to be
" the parts that become vitiated, and rendered
" capable of propagating the morbid poison.
" This opinion receives strong confirmation by
" red blood not being met with in such tumours,

“ in the latter and confirmed stages of the dis-
“ ease, and the tumour itself, in its increase, be-
“ coming harder in its texture; to which we
“ may add, that the only discharge that takes
“ place, when such tumours produce any, is an
“ aqueous fluid, or in other words, serum devoid
“ of its coagulable lymph, which in a natural
“ state it contains in considerable quantity.
“ This discharge, in some cases, is in very great
“ quantity, and when that happens, the increase
“ of the tumour and the progress of the disease
“ very often appear to be arrested. In healthy
“ parts, when a breach is made, and the parts
“ are not united by the first intention, suppura-
“ tion is produced over the surface of the sore
“ and pus is formed. This pus is converted
“ into new flesh, and has been till now con-
“ sidered as no part of the circulating blood, but
“ a new substance formed: it is, however,
“ nothing more than the blood globules and
“ the carbonic acid gas, with the serum of the
“ blood, and the coagulable lymph contained in
“ it, which, when exposed to the atmosphere,
“ coagulates, becomes vascular, and then takes
“ the name of granulations. Where vessels car-
“ rying red blood are not injured, but only those

“ carrying lymph globules and serum, new flesh
“ cannot be produced, the materials for its formation not being present. When this happens upon membranes, the lymph coagulates upon the surface that throws it out, and the carbonic acid gas contained in it becomes vascular; and then it possesses all the properties of the membranes of the living body, the superfluous serum having escaped into the cavity which the membrane lines. We have illustrations of this in inflamed veins, and in inflammation of the dura mater of the brain; but this newly-formed substance does not become the seat or origin of disease, neither the serum, nor the lymph, of which it is composed, having acquired any morbid quality.

“ When the internal structure of any of the more solid parts of the human body is lacerated, or otherwise injured, the ruptured vessels in it throw out their contents; those that carry red blood part with that fluid; those that have only the serum and coagulable lymph globules circulating through them can only deposit these in the surrounding parts. When the body is in health, and the injured parts are capable of carrying on their healthy

“ action, the orifices in the vessels made by the
“ injury are soon closed, the extravasation is
“ stopped, and the fluid thrown out coagulates,
“ and is absorbed ; but in constitutions inca-
“ pable of producing these effects, intended for
“ the restoration of the parts, the tumour formed
“ by the extravasation increases, and a section
“ of it, when removed by the knife or by
“ caustic, exhibits the appearance I have
“ described ; the structure of which, whether it
“ is affected by the secretion of the glands being
“ retained and mixed with the ingredients of the
“ serous vessels, it is not possible to determine ;
“ but as it is not only in glandular, but in other
“ structures that cancer is met with, this is pro-
“ bably not the case. The compacted lymph
“ globules, among which there is no apparent
“ circulation of any kind, is probably the
“ morbid part, and that which carries on the
“ disease, both by its contact and absorption ;
“ since, as the malady continues, it increases in
“ bulk ; and when any part of it remains, after
“ an ineffectual attempt at its removal, a ra-
“ pidity in the progress of its increase takes
“ place. The aqueous fluid, separated from
“ this morbid consolidated mass of lymph glo-

“bules, is generally considered as partaking of the morbid poison. Of this, however, upon considering all the circumstances, I am very much disposed to doubt.”*

“When the coagulable part of the blood is effused, and the absorbents do not take it away, the surrounding blood-vessels are supposed to grow into it, and convert it into a vascular tumour. The effusion of the coagulable part of blood may be the effect of accident, or of a common inflammatory process; or it may be the consequence of some diseased action of the surrounding vessels, which (diseased action) may influence the organization and growth of the tumour.”†

“A blow or a bruise inflicted on a healthy person would be followed by common inflammation only, which would lead to the removal of the matter effused. But if a blow were received in the breast, when the constitution was in a state disposed to the formation of scirrhus tubercle, it would be the cause of a particular action being excited in the part injured, and might lay the foundation of this

* Sir Everard Home on the Formation of Tumours, p. 23.

† Cooper's Surgical Dictionary, page 1122.

“ complaint, therefore you see, no blow, no
“ pressure on the part, or any accidental cir-
“ cumstance whatever will produce scirrhus, if
“ the constitution be sound. There must be
“ some predisposing cause in the constitution,
“ else it will not occur.”

“ Yet the formation of scirrhus tubercle does
“ not entirely depend on constitutional derange-
“ ment; there must be also a peculiar action ex-
“ cited in the part, and if there be no specific
“ action nor any of the scirrhus kind, you will
“ have no appearance of disease. To show you
“ that it is dependent on these two states, con-
“ stitutional derangement and an altered action
“ in the part, I will mention to you that if you
“ cut into a scirrhus tubercle, it will ulcerate,
“ and all the horrors of cancer will very soon be
“ the result of the injury; but suppose you cut
“ round the tumor, in the healthy parts where the
“ disease has not shown itself, the wound heals
“ and no ulceration of the part follows; and
“ again, after the removal of a scirrhus breast,
“ the wound usually heals very kindly. If there
“ is a disposition in the constitution to the pro-
“ duction of the disease in any part, some circum-
“ stance exciting a peculiar action in it must

“ occur, and then scirrhus inflammation is prevalent.”*

In chimney-sweepers' cancer there is no primitive carcinomatous tubercle, for the disease being produced by purely local causes, and prior development of local cancerous disposition, the first symptom is erosion from the action of the soot ; but, as the disease progresses, it propagates carcinomatous swellings at a distance from its primary seat, and, at last, not a single symptom of true carcinomatous disease is wanting. With regard to other causes, besides soot, which may produce a local disposition to cancerous degeneration, the author must refer to the essay of M. V. Walther. From his statements it appears probable that these causes are such that while they are not sufficiently irritating to produce simple inflammation, blunt the irritability of the part by their often-repeated impression ; or which, from the very first, disturb the harmony between the vegetative activity of the part and the whole organism, as would be done by a contusion or other violence inflicted on a part ; an organ once brought into this state remains incapable

* Sir Astley Cooper's Lectures, page 381.

of generating simple circumscribed inflammation, when afterwards acted on by causes which would otherwise suffice for its production. The manner in which the carcinomatous dyscrasia becomes developed from a merely local disposition transcends our researches. It can, however, be easily understood, that when once cells with a productive tendency have been formed, the reception of the germinal nuclei into the circulation may determine their distribution to some part predisposed to receive them, and may thus give rise to the formation of secondary tumors.

We shall next direct the attention of our readers to some very scientific and interesting observations by Dr. William Budd of Bristol, and we have been induced to copy his remarks at great length, as it is our desire to enter into the investigation as fully as we are capable of doing, and giving the observation of others on this important subject. “ If we watch the whole course of “ cancer from its first origin in some external “ part,—as in the female breast, for example,— “ to its fatal termination, we observe the following series of events. At first all that can be “ discovered is a small, hard tumour, lying loose “ in the substance of the organ. This now con-

“stitutes the whole disease ; for at this time
“there is no other tumour in the body, and the
“general health is not affected. If the cancer be
“cut out at this very early period, it sometimes
“happens that the disease never returns, and
“that the patient is radically cured. This is a
“very important fact ; not only in a practical
“point of view, but also in relation to our theory
“of the disease ; but if, instead of being removed,
“the cancer is allowed to take its course, the fol-
“lowing changes occur. The tumour continues to
“grow, and in its growth contracts adhesions with
“all the surrounding parts. The tissue of these
“parts is invaded by the new structure, and is
“soon obliterated by it ; when the tumour has at-
“tained a certain size, it begins to soften in some
“part of its mass ; soon after this, fluctuation
“may be felt ; the skin becomes inflamed and
“ulcerated, and the tumour bursting, becomes
“an open sore. But while these changes take
“place in the original seat of disease, others
“occur in distant parts, which are much more
“important to my present object. In the first
“place the glands in the axilla become enlarged,
“and, sooner or later, symptoms of visceral dis-
“ease usually come on, together with hectic and

“ emaciation, under which the patient gradually
“ sinks. In some cases a short time before death,
“ cancerous tumours appear in countless num-
“ ber, immediately under the skin.”

“ Now, when the body of a person who has
“ died in this way is examined, not only are the
“ lymphatic glands in relation with the original
“ disease found converted into cancerous tu-
“ mours, but the substance of the viscera, also,
“ is studded with them. This question, there-
“ fore, at once arises.—In what manner has this
“ taken place? It is evident, that the glands in
“ relation with the tumour have become infected
“ by absorption of cancerous matter, in the same
“ way in which bubo is caused by absorption of
“ syphilitic virus from a chancre. The lymphatic
“ glands leading to these glands are always loaded
“ with this matter. But the infection of the vis-
“ cera, and of the system at large, cannot well
“ have been affected through this channel. The
“ blood is the only medium qualified, by its na-
“ ture and diffusion, to be the means of such
“ wide dissemination; and it is, in fact, by the
“ agency of this fluid that the general infection
“ takes place. This admits of complete demon-
“ stration. The first fact which strikes attention,

“ as bearing on this question, is, that the viscera
“ which are most liable to become infected with
“ secondary cancer, are the very same in which
“ foreign bodies in the blood usually stagnate ;
“ namely, the lungs and the liver.”

“ When mercury is injected into the veins, the
“ substance of those organs is found studded
“ with a countless number of globules of this
“ metal ; and it is notorious that when pus finds
“ its way into the blood, its corpuscles lodge in
“ the same textures, and then become the cen-
“ tres of a vast number of disseminated abscesses.
“ Now the tumours of secondary cancer are not
“ only disseminated through the substance of
“ the lungs and liver in the same scattered
“ manner, but they make their appearance in
“ the same anatomical elements of these organs.
“ In their early state the form of these tumours
“ is in the liver exactly that of the acini, and in
“ the lungs that of its lobules ; and I need scarcely
“ add, that the same is the case with the ab-
“ scesses of these organs, which follow the intro-
“ duction of pus into the veins.”

“ From these facts the inference is plain, that
“ the morbid matter in both cases is disseminated
“ through the same channels. The cancerous

“ matter, like the pus, having found its way into
“ the circulation, lodges in those capillaries, by
“ which the course of other foreign bodies is
“ arrested, and there become the germ of a new
“ growth, which is itself a repetition of that by
“ which this matter was first produced. That
“ the matter of cancer may become detached
“ from the original growth, and be carried by
“ vessels to distant parts, and that it may then
“ become the germ of a new growth, like to the
“ first, is proved by the manner in which the
“ lymphatic glands become contaminated. The
“ only fact needed, therefore, to complete the
“ demonstration, is the detection of cancerous
“ matter in the veins leading from parts affected
“ with the disease.”

“ Now in almost all cases of general cancerous
“ infection, not only are the principal veins lead-
“ ing from the original growth loaded with cancer-
“ ous matter, but palpable masses of this matter
“ are found included in the coagula of these
“ veins, and even in those of other veins at con-
“ siderable distances from the seat of disease.

“ It may be considered, therefore, as com-
“ pletely established, that the secondary tumours
“ with which the viscera and other parts become

“ infected in these cases, originate from germs,
“ which becoming detached from the parent
“ growth, have found their way into the blood,
“ and have been deposited by it in their new
“ situations. The proof here is of exactly the
“ same order as in the case of phlebitis, only
“ that it is more complete ; there is not one link
“ wanting in the whole chain of evidence.

“ According to these views, then, the general
“ cancerous infection is wholly effected by dis-
“ semination from the original tumour. Some
“ rare cases do, indeed, occur, in which there is
“ reason to suppose that the first formation of
“ cancer has taken place at more than one point ;
“ but these do not affect the doctrine here
“ advanced. I speak here of the general in-
“ fection of the body ; and the only difference
“ is, that in these cases this infection takes
“ place from two or three points, instead of one.
“ The secondary tumours also bear evidence
“ in their anatomical characters of their later
“ origin. Add to this the fact, already ad-
“ verted to, that when the original growth first
“ appears, there is no evidence of similar disease
“ in other parts of the body ; also, that when it is
“ cut out at an early period, a radical cure is often

“ obtained, and there will scarcely remain a doubt
“ of the truth of this doctrine. The strict analogy
“ of the case, in all points touching this doctrine,
“ with that of general purulent infection by pus
“ derived from a single source, is a decisive con-
“ firmation of it. The cancerous matter, how-
“ ever we may account for its origin, is almost
“ always first formed at a single point; and the
“ tumour which is there developed, is the source
“ of all the after-contamination. This is a truth
“ of first-rate importance. And although it is
“ very generally admitted by those who have well
“ considered the subject, I have been anxious to
“ bring forward the evidence on which it rests,
“ because very vague and unsettled notions on
“ this point are still prevalent in the profession ;
“ surgeons, in particular, do not appear to me to
“ have kept it clearly and steadily in view, nor
“ to have insisted upon it with the firmness its
“ importance demands. At all events they have
“ not uniformly enforced the practical precept to
“ which it so imperatively points; namely, the
“ early extirpation of cancerous growths where-
“ ever this is feasible. The efficacy of this prac-
“ tice is placed beyond a doubt, by the nume-
“ rous cases of cancer of the face, in which

“ it proves completely successful. That this
“ is not owing to any want of power in this
“ variety of cancer to infect the system, is abundantly shown by cases in which the operation
“ is too long deferred, or in which the disease is
“ allowed to take its course. The true and
“ perhaps the only reason why extirpation is so
“ much oftener successful in cancer of the face,
“ than in that of other parts, is that the disease,
“ from lying open to view, is recognised at a
“ much earlier period in this situation, so that
“ its removal is determined upon, and accomplished, before it has had time to contaminate
“ neighbouring parts, or the system at large.”

“ In this rapid sketch of the usual course of
“ cancer, my chief object has been to bring prominently forward the two fundamental characteristics of the disease; namely, its irresistible
“ tendency to invade and destroy all structures
“ within its immediate reach, and its singular
“ power of self-dissemination by means of germs
“ from the parent growth. These characters are
“ peculiar to cancer; and all morbid growths
“ which possess them, however they may differ
“ in outward appearance, or other peculiarities, are but varieties of one disease. They

“ are indeed very wonderful properties, and the
“ anatomical and other characters of the struc-
“ ture to which they belong, and, in particular,
“ the nature of that element which plays the
“ part of germ in the dissemination of the disease,
“ have naturally long been objects of lively curi-
“ osity and sedulous research.”

“ All these points have lately been investigated
“ with complete success. It is familiar to all
“ that the substance of cancer is generally
“ made up of two principal elements, a pulpy
“ matter, deposited in the meshes of a fibrous
“ web.”

“ The blood-vessels by which cancerous
“ growths are nourished, are also very easily
“ seen, especially when previously injected.
“ Some varieties of cancer, are, in fact, remark-
“ able for their high degree of vascularity. Un-
“ der the microscope the fibrous element of
“ the growth retains its fibrous aspect, even
“ when viewed under a high power, but the
“ pulpy matter appears in an organized form of a
“ highly interesting kind. This matter (as I
“ presume you are already aware) is then seen
“ to be almost entirely made up of cells, having
“ all the characters of those which are now

“ known to play such an important part in the
“ formation of all organized tissues”

“ These cells are, for the most part, globular,
“ but some are caudate, or spindle-shaped ; and
“ in some varieties of cancer the latter form
“ predominates. They nearly all have parietal
“ nuclei, and their variety contain a great num-
“ ber of granules, which are supposed to be
“ cytoblasts, or germs of new cells. Granules of
“ the same kind often lie crowded in the inter-
“ vals between the cells, and sometimes even
“ form the greater part of the mass. It is im-
“ portant to remark, that in most forms of
“ cancer, the cells cohere but very slightly, so
“ that notwithstanding the thinness of their
“ walls, they may be detached from one another,
“ and isolated with the greatest ease ; nor
“ have they any apparent attachment to the
“ fibrous texture, in whose meshes they lie im-
“ bedded. One of these specimens is encephalo-
“ id, or soft cancer ; the other colloid, or
“ alveolar cancer ; a variety which has this
“ remarkable peculiarity, the several generations
“ of cells are often included one within another,
“ like a nest of pill-boxes.”

“ Now, since it is known that almost all tissues,

“ whether animal or vegetable, are formed by
“ development from cells having these charac-
“ ters, there can be no doubt that the cells now
“ described are the true formative element of can-
“ cerous growths. These growths, surely, do
“ not form the single exception to a law which
“ is so general as to include almost all the
“ various tissues of animal and plant. But be-
“ sides this nowhere are the formative attributes
“ of these cells more manifest than in cancer.
“ Numbers of cancer cells contain young cells
“ within their cavity, and others are scattered in
“ abundance through the crowd, which in their
“ smaller size and other characters, betray
“ their secondary origin. In a single growth,
“ in fact, you may often meet with cells in every
“ stage of development, from their first rudi-
“ mentary state to that in which, as spindle-
“ shaped bodies, they are passing into the form
“ of fibre. But if it be admitted, that these
“ cells are the formative element of the parent
“ growth, it seems to follow of necessity, that
“ they are also the germs, or seed, by which the
“ disease is disseminated over the body ; for
“ it is clear that these germs must belong to
“ that element in which the formative power

“ resides, since by them new growths, are engendered, identical with the first. You will remember also, that these cells cohere but slightly, so that by this condition they are well suited to the work of dissemination.”

“ This view is confirmed by other considerations. I have already called your attention to the fact, that not only are the germs of secondary cancer most commonly deposited in the lungs and liver, in the same manner as globules of pus, or mercury, that have found their way into the blood; but that they make their first appearance in the very same anatomical elements of these organs. Now this can only happen from some common condition, and the only thing that cancer germs, and globules of pus and mercury can have in common, is outward form. I need scarcely add, that the only element of cancer having the form required are the cells now described. The lodgment of all these bodies in the texture of the lungs and liver is, undoubtedly, determined in great part by mechanical condition, and most probably happens, because their particles are too large to traverse freely the capillaries of these organs. It is plain,

“ therefore, that the cells just now described are
“ the all-important and essential element of
“ cancer.”

“ Each cell may be regarded as the individual
“ representative of the disease, since it contains
“ within itself all the powers required for its
“ development and dissemination; and when
“ the microscopic minuteness of these cells is
“ considered, this view acquires a fearful interest
“ for the operator: for, although after the
“ removal of a tumour large numbers of them
“ should be left behind, they necessarily remain
“ unseen, so that the surgeon has no means of
“ knowing whether the extirpation be complete;
“ a consideration which singularly enhances the
“ recognized importance of cutting as wide as
“ possible of the growth, as giving the best and
“ only chance of securing this.”

“ How far the granules which lie within and
“ between the cells share in their attributes, is
“ not exactly determined. While these gra-
“ nules are in close connexion with the cells of
“ the parent growth, they seem to have the
“ power of evolving new cells, so that they may
“ possibly retain this power when detached from
“ it; but from what has already been said, it is

“ evident that the production of new cells in
“ the original growth, as well as the dissemina-
“ tion of the disease, are chiefly the work of
“ cells already formed.”

“ Before we proceed further, it may be well to
“ pause, and contemplate for a moment the
“ wonderful endowments of these bodies. Nou-
“ rishing themselves at the expense of the orga-
“ nism in which they are implanted, but in
“ other respects, independent of it, they may
“ be fitly styled parasitic growths. Of their
“ independent vitality they give sufficient proof,
“ not merely in their power of indefinite de-
“ velopment by successive generation of new
“ cells, but in the retention of this power when
“ detached, and in the character of isolated be-
“ ings, they are separated from the growth, and
“ transported to remote parts of the system.
“ Viewed in this character, they offer a very
“ striking spectacle; for the only time in the
“ long train of maladies to which the human
“ body is liable, does the essential element of
“ disease appear in this form.”

“ In the large and important group of conta-
“ gious disease, we do, indeed, encounter an
“ element, having like this, the power of multi-

“plying itself at the expense of the organism
“into which it is received; but that element is
“not tangible to our present instruments of
“research, and its shape and character are alike
“unknown; whether it be a chemical substance
“merely, or an organized body we cannot tell;
“nor do we know the manner of its increase.
“But in the present case, this element is an
“object of sight, of definite shape, and an
“organized form. It is certain that here in-
“crease is not the result of a chemical state,
“but the growth of a living thing.”

“All the interesting speculations into which
“we are unavoidably led, in discussing
“the origin of contagious principles, renew
“themselves here, therefore, in a more definite
“form, as attached to a palpable object, and ren-
“dered doubly interesting by the still closer
“connexion in the present case, with the mys-
“terious question of spontaneous generation.
“But these speculations will again force them-
“selves upon us, when considering the cause of
“cancer.”

“After all that has been said, it is almost su-
“perfluous to remark, that cancer is not a repe-
“tition of any of the natural tissues of the

“ body, but something of essentially different
“ nature. It is extraordinary that Müller, to
“ whom we are indebted for almost all we know
“ of the minute anatomy of cancer, and all the
“ attributes of its elementary parts, should hold
“ a contrary doctrine. ‘The essential elements
“ of cancer,’ he says, ‘are nucleated cells and
“ fibres; but these are also the elements of the
“ natural tissues: therefore there is no essential
“ difference between the two.’ He might as
“ well have argued that there is no essential
“ difference between the flesh of an animal and
“ the parenchyma of a plant, for this, too,
“ is made up of small nucleated cells and
“ fibres.

“ The chief object of the memoir in which the
“ important part which cells perform in the
“ formation of all living tissues, was first made
“ known, was to prove the identity of plants and
“ animals in ultimate structure, and in their
“ mode of growth, and developments its title was
“ to that effect.”*

* Mikroskopische Untersuchungen über die Neber—ein-
stimung in der Structur und dem Wachsthum der Thiere
und Pflanzen.— Schwann.—Berl. 1839 8vo.

“ In works on minute anatomy we continually
“ see it stated that certain tissues are made up
“ of cells, exactly like those of vegetable paren-
“ chyma. But are these things the less for that
“ essentially different in their natures? The mi-
“ croscope, in revealing to us the existence of
“ cells, alike in structure in almost all the tissues
“ of animals and plants, and having the same im-
“ portant formative endowment in all, has dis-
“ closed a law of higher generality than any yet
“ attained to in physiology, and has admirably
“ simplified our views of structural development ;
“ but by the very fact has also shown that we
“ are not to look to these minute anatomical
“ elements for specific characters and distinc-
“ tions. Under the microscope, vegetable pa-
“ renchyma and cartilage, in its early state, are
“ one ; for essential distinctions of nature we
“ must turn to other qualities and other attri-
“ butes. Need I say how widely those of can-
“ cerous growths separate them from the natural
“ tissues of the body ?”

“ I have laid some stress on this point, because
“ I think it one of much importance ; for there
“ can be no doubt that this essential difference
“ of nature between cancerous growths, and the

“ normal tissues of the body is closely connected
“ with the independent powers of life and
“ nourishment these growths possess, if not
“ their very foundation. No morbid, which are
“ but repetitions of natural tissues, have such
“ power. No one of these breeds germs that
“ carry with them to distant parts independent
“ powers of life and nourishment.”

“ It would be out of place here to enter into
“ a particular description of the different varie-
“ ties of cancer. You are well aware that in
“ different cases great varieties are observed in
“ the outward appearance and general texture of
“ cancerous growths, as also in their degree of
“ vascularity, relative rapidity of development,
“ and other physiological properties. The vari-
“ eties are indeed so considerable, and relate to
“ points of such material importance, that many
“ pathologists have been led to regard some of the
“ morbid growths in which they are found, not as
“ varieties of one disease, but as really distinct
“ in species ; but the contrary may be proved by
“ paramount considerations.”

“ The single fact, that the encephaloid, or soft
“ kind of cancer, is generated alike by germs
“ from all the othes varieties, is in itself conclu-

“ sive, for this is the highest proof of specific
“ identity that can be had. It is well known
“ that whatever be the form of the original can-
“ cer, the secondary tumours are almost always
“ of this kind. Nor shall I discuss at any great
“ length the condition by which the rapidity of
“ the growth and dissemination of cancer is deter-
“ mined. It is quite evident that the principal
“ of these is a plentiful supply of blood-vessels ;
“ for the rapid growth, and for the effectual
“ dissemination of cancer a good supply of ves-
“ sels is alike required ; in the first case, to
“ bring plentiful nourishment to the parent
“ tumour ; in the second, to furnish channels
“ for carrying away its germs. For the second
“ object it is also necessary that these germs
“ should become easily detached, or in other
“ words, that the parent tumour should be of
“ soft and loose consistence.”

“ In the encephaloid variety, these conditions
“ reach their acmé, and accordingly this variety
“ is notorious for its terrific rapidity of growth
“ and wideness of dissemination. In the other
“ varieties of cancer they attain their highest
“ point at the period of softening, and it is well
“ known that at this period a sudden and re-

“ markable increase takes place in the rapidity
“ of both these processes.

“ I have only one remark more on this topic ; it
“ is self-evident that the extent of dissemination
“ will, *cæteris paribus*, be greater, the longer the
“ time allowed for its accomplishment. For
“ this reason it is generally much greater when
“ the original cancer is seated in parts unim-
“ portant to life, than when it occurs in vital
“ organs ; for, in the latter case, the patient
“ dies of the original disease before sufficient
“ time has elapsed to allow of wide dissemina-
“ tion. It is easy to conceive how this event
“ may be further and largely influenced by
“ varieties in the shape and size of the cancer-
“ cells, in different forms of the disease, and
“ by the general calibre of the vessels of the
“ part in which the original tumour is seated.
“ The relation between the calibre of the capil-
“ laries of other parts, and the size of the cells
“ in its influence, as determining the seat of the
“ secondary tumours, has been already consi-
“ dered.”

“ In effect of variety of these numerous con-
“ ditions, whether separate or in combinations,
“ endless varieties necessarily occur in particular

“ cases, in the course and dissemination of cancer,
“ and in the number and seat of the secondary
“ tumours.”

“ Having considered pretty fully the most
“ essential points in the pathology of cancer, we
“ are now prepared to enter upon the discussion
“ of its causes. This, which is the most difficult
“ as well as the most important point in the
“ history of nearly all diseases, should generally,
“ also, be the last to be considered; for the
“ causes of most diseases act unseen, and can
“ only be discovered by reasoning from their
“ effects. This gives us the only trust-
“ worthy clue to guide us to their hiding-
“ place: for until we know the nature of a
“ disease, and the true character of the morbid
“ elements in which its essence consists, it would
“ be vain to hope to speculate with success
“ on its cause, since we do not yet know what the
“ presumed cause will be required to account for.”

“ The patient who is suffering from the
“ coryza of iodide of potassium, attributes his
“ disorder with the most implicit confidence to
“ the influence of cold, and will name, with-
“ out misgiving, the precise moment of ex-
“ posure. The physician who knows the real

“ state of things, smiles at his error ; but in
“ other cases where the physician shares
“ in the ignorance of his patient, both make
“ the same blunder. I must therefore beg you
“ again to consider for a moment the character-
“ istics of cancer, and the nature of the morbid
“ element which represents the disease.”

“ It must be borne in mind, that this ele-
“ ment is an organized thing, essentially dif-
“ ferent in nature from the normal tissues of
“ the body, endowed with independent powers
“ of life, and only relying on the body for the
“ materials for its subsistence. The inde-
“ pendence of these powers sufficiently appears
“ in this, that germs preserve them unimpaired
“ when detached from the parent growth, and car-
“ ried to distant parts of the organism ; and it is
“ still better proved by the fact, which now seems
“ well established, that, under favourable circum-
“ stances, these germs may be transferred with
“ the same effect from one organism to another.”

“ Professor Langenbeck injected into the veins
“ of a dog some pulp taken from a cancer that
“ had just been removed from the living body.
“ In the course of some weeks the dog began to
waste rapidly : he was then killed, and on

“ being examined, several cancerous tumours
“ were found in his lungs. So many cases have
“ occurred of cancer of the penis in men whose
“ wives had cancer of the uterus, that many
“ physicians have been led to believe that the
“ disease in these cases was propagated by con-
“ tagion. Professor Langenbeck’s experiment
“ gives colour to this opinion, and other facts
“ leave little room to doubt its justness. In
“ different parts of the same body contamination
“ by contact often occurs without direct vascular
“ connection.”

“ Cancer is frequently propagated from the
“ liver to the abdominal parieties by mere contact
“ without adhesion. Why, therefore, may it not
“ be sometimes communicated from one individual
“ to another in the same way? All that seems
“ to be required is, that the germs be deposited
“ on a thin and delicate membrane well supplied
“ with vessels; a condition which is perfectly
“ fulfilled by the integuments of the glans
“ penis.”

“ Now while the facts just stated, and in par-
“ ticular the experiments of Langenbeck, prove
“ beyond doubt the independent vitality of the
“ germs of cancer; they also show that the

“lodgment of one or more of these germs in a
“single part is in itself, and independently of con-
“stitutional predisposition, sufficient to establish
“the disease. This I have already endeavoured
“to prove by other considerations, but here the
“fact is no longer questionable. Our inquiry
“now takes, therefore, a definite and limited
“form. What we have to account for is, the
“source or origin of the first germ of the dis-
“ease. The question is clear in its condition,
“for the germ itself is an object of sight, and
“its nature and properties are known to us.”

“Two hypotheses at once offer themselves,
“and one or other must be adopted. It may be
“supposed either that the germ is introduced
“from without, in its proper form, and with full
“possession of its attributes, or that it is gene-
“rated within the body, and of the materials of
“the body, under the influence of external or
“other agencies. Now, to the former supposi-
“tion, then, is this great objection, that we know
“of no probable source external to the body
“from which such a germ could be derived, and
“in which it could have held its prior existence.
“There is, indeed, reason to believe, as already
“shown, that it may, in some cases, be durably

“ implanted from disease in another individual ;
“ but by far the greater number of cancers ori-
“ ginate under circumstances in which the idea
“ of this source is quite precluded.”

“ Numerous facts, indeed, point to another
“ source, in many cases of a widely different
“ nature, and show that if the germs of cancer
“ be always introduced from without, they must,
“ in their first state, inhabit a very different
“ medium from that of the living body, and
“ have a very different mode of existence from
“ that in which they are afterwards placed.”

“ I shall presently state some facts, from which
“ the inference seemed unavoidable, that com-
“ mon soot, when applied to the skin for long
“ periods of time, is an effectual cause of cancer.
“ Under the supposition I am now discussing,
“ therefore, this substance must contain the
“ actual germs of the disease. Now, it cer-
“ tainly is very difficult to conceive that the
“ cancerous element, as we know it in the living
“ body, nourished with blood vessels, and having
“ all the characters of flesh, can also live and
“ multiply in the soot of our chimneys.”

“ There are great difficulties in the way of
“ supposition that the cancer-germ came from

“ without. To some these difficulties will appear
“ insuperable, and quite sufficient to exclude
“ this hypothesis; but on further consideration
“ this may not seem so certain; for we encoun-
“ ter exactly similar difficulties in the case of
“ true parasitic animals. I may mention as an
“ instance that of the cysticeri, which in-
“ habit our muscles; and of still higher entozoa
“ which infest our other tissues. Do we know
“ the source from which their ova come, and
“ how they first gain admission to the deepest
“ recesses of the body? Do we even know a pro-
“ bable source, external to the body, from which
“ they might be derived? To all these ques-
“ tions it must be answered in the negative.”

“ But notwithstanding this, few will be
“ inclined to allow that these beings also origi-
“ nate within the body, under the influence of
“ common agencies. Great, therefore, though
“ the difficulty may be of conceiving the exist-
“ ence of the germs of cancer in external
“ sources, and especially in such as those in
“ which observation would lead us to seek them,
“ this hypothesis may still, perhaps, be reason-
“ ably entertained, and reserved for the test of
“ future inquiry; and the more so, because

“ difficulties, almost equally great, stand in the
“ way of the alternative. It is, in fact, very
“ difficult to conceive that a thing so specific in
“ its nature, and endowed with such remarkable
“ properties, as the germ of cancer, can be
“ actually engendered from the mere normal
“ materials of the body under the influence of
“ common agencies. This, to say the least, is
“ treading very close upon the heels of spontaneous generation: for to constitute that,
“ what do we want more than the fabrication
“ without the aid of germ or ova of an organized
“ thing, definite in form, and endowed with
“ independent powers of life and nourishment
“ and with the faculty of self-propagation. Large
“ groups of beings are recognised by the naturalist quite as simple as the cancer-cell, both
“ in form and in their mode of propagation. If,
“ then, physical or any other agencies have
“ power to cause the evolution of bodies such
“ as these from the normal materials of the
“ blood or tissues, it is, you will allow, a very
“ remarkable prerogative. There are some,
“ indeed, who do not find such difficulty in
“ this.

“ Pus, they say, is a very simple case in point ;

“ for this, every one knows, may be produced at
“ will by any common cause of irritation : but
“ when its globules find their way into the blood,
“ they soon cause, in distant parts, the forma-
“ tion of a new stock, by which their number is
“ vastly multiplied. And, as this takes place
“ with much less local vascular change than
“ attends the formation of pus in common in-
“ flammation, its globules may fairly be supposed
“ to multiply much in the same way as cancer-
“ cells ; and thus our difficulty seems to be
“ resolved by a very simple and plain analogy.
“ But on closer examination there is seen to be
“ much difference between the two cases.

“ In the first place, pus, far from being, like
“ cancer, a specific thing, and originating only
“ under rare and special conditions, is the com-
“ mon product of almost every kind of irritation.
“ That pus-globules should excite suppuration
“ where they lodge, is not, therefore, at all
“ remarkable, and certainly does not necessarily
“ imply the fact of *breeding* in the same sense
“ in which this must be understood of cancer-
“ germs. Nor can pus be strictly considered an
“ organized and living thing, as cancer certainly
“ is; for, although the pus-globule has an organic

“ form, yet it is not capable, like cancer-cells,
“ of making part of living structures, having
“ vascular connection with the body, and nou-
“ rished like other tissues. This analogy being,
“ then, after all, loose and incomplete, the diffi-
“ culty, as first stated, remains in greater force.

“ An analogy, less apparent at first sight, but
“ which, in reality, meets the difficulties of the
“ case more satisfactorily, is to be found in the
“ characteristics of one of the normal constitu-
“ ents of the body, namely, the blood-globules ;
“ for these globules have this in common with
“ cancer-cells, that not only do they exhibit
“ living properties attached to an organized form
“ circulating over the body, but they retain
“ these properties even when transferred from
“ one body to another, as in the case of trans-
“ fusion.

“ Now, the first blood-globules in the embryo
“ do not spring from others ; so that, if the
“ opinion which is gaining ground among ana-
“ tomists should be ultimately established, that
“ when once formed they have in their character
“ of cells, and in common with development-
“ cells in general, a power of self-propagation,
“ their case would really remove some of the

“ most serious difficulties in the way of the
“ hypothesis under discussion, although others
“ might still remain untouched by it. Is it pos-
“ sible that the cancer-cell may be a degenerated
“ blood-globule ?

“ Having considered the speculative objections
“ to both suppositions, let us now see which best
“ accords with observed facts. In carefully
“ examining the circumstances under which
“ cancer has been found to arise, we meet with
“ two cases in which it originates, in evident
“ and important connection with local conditions,
“ affecting the part in which the disease makes
“ its appearance. One of these has already
“ been mentioned. It is the cancer of chimney-
“ sweeps.

“ As only a small number of these men be-
“ come affected with cancer, some pathologists
“ have argued that the part which soot plays in
“ the case is altogether secondary and unimpor-
“ tant, and that it only acts in giving a local
“ development to a cancerous diathesis already
“ existing in the persons affected. But this is a
“ false mode of reasoning. It is not assumed
“ here that soot is an *infallible* cause of cancer :
“ but that it may be regarded as a real and

“ effectual cause, is clearly shown by the fact
“ that the number of chimney-sweeps who
“ become affected with cancer is vastly greater
“ in proportion to their own body than that of
“ other men, to the male population of the same
“ ages ; for of this fact there is no doubt. But
“ the real efficacy of soot as a cause is, perhaps,
“ still better shown by the fact, that persons
“ who have been long in the habit of handling
“ it are very liable to get cancer in the hands.
“ A very interesting instance of this is recorded
“ by Mr. Travers. A man was admitted into
“ St. Bartholomew’s with cancer of the right
“ hand ; Mr. Earle, under whose care he
“ was placed, was so forcibly struck with the
“ exact resemblance of the disease to sweeps’
“ cancer, that he was at once convinced that
“ soot must have had something to do with
“ bringing it on. On inquiry, it turned out that
“ the man was a gardener, and that for many
“ years he had been in the constant habit of
“ handling soot, while spreading it over his beds
“ in the way of manure.

“ The other case, to which I just now referred,
“ is that of the connection of cancer of the
“ penis with congenital phymosis. The reality of

“ this connection may, I think, be shown on the
“ same grounds as those brought forward in the
“ former case; for from what I have myself seen, I
“ have not the least doubt that persons with con-
“ genital phymosis become affected with cancer
“ of the penis in vastly greater proportion than
“ other men. Now these two cases, and espec-
“ ally the latter, certainly tell much in favour of
“ the second hypothesis, that the first germ of
“ cancer is bred in the body: for, while it is not
“ easy to see what phymosis can have to do with
“ supplying cancer-germs from without, it is not
“ difficult to conceive that in this case the reten-
“ tion of acrid secretions, and in the case of chim-
“ ney-sweeps the prolonged application of soot
“ may cause that specific kind of irritation which
“ we may suppose to be required to develop the
“ first germ of the disease by a special morbid pro-
“ cess. But cancer also originates in other cir-
“ cumstances still more in favour of the doctrine
“ that its first germ may be formed by a process
“ of this kind.

“ Cancer not unfrequently appears as a family
“ complaint. Instances are known in which
“ several children of one family have fallen vic-
“ tims to the disease. Now, while it is very diffi-

“cult to understand how the mere fact of relationship should cause in several individuals the introduction of cancer-germs from without, it is very easy to see that it may effectually dispose them to the formation of the same morbid products. Instances of this are common enough in tubercle and many other diseases.

“On the whole, then, it appears that the evidence at present greatly preponderates in favour of the doctrine that the first germ of cancer is not introduced from without, but is evolved within the body by a special morbid process. Some will, no doubt, think this evidence conclusive. I have laid it before you fairly, and I leave you to decide for yourselves. For my own part, considering the peculiar difficulties of the subject, the minuteness of the object whose origin we seek to discover, and the proportionate difficulty of obtaining certain evidence regarding it, I think it more philosophical to reserve our judgment for the ‘fiat’ of future discovery. If I am not deceived, you will find in the remarks I have had the honour to offer you this evening, sufficient motives for this reserve. At all events, I shall be perfectly satisfied if in this rapid sketch I have brought into view the full

“ scope and importance of the subject we have
“ been considering. Closely connected from the
“ first with that relating to the origin of conta-
“ gious disease, and at length identified with it,
“ we have also seen how nearly it touches the
“ high and mysterious question of spontaneous
“ generation.

“ These several questions may, indeed, all be
“ summed up in this one, whether or not, and
“ under what limitations, things specific in their
“ nature, and which multiply by propagating
“ their own kind, may also be engendered in
“ other ways. This great question, in one form
“ or another is at this time powerfully agitating
“ the minds of scientific men. Under the influ-
“ ence of discussion our conceptions of its con-
“ ditions are gradually clearing up, so that we
“ may hope that here, as in other subjects, this
“ period is the prelude to discovery.”*

CARCINOMA RETICULARE. (*Müller.*)—Said to occur in the female breast even more frequently than carcinoma simplex. On making a section of it, it may be immediately distinguished from the latter by the white reticulated figures intersecting the grey mass, which are perfectly

* Lancet, p. 298, Nos. 8 and 9, 1841-2.

evident to the naked eye. It acquires a large size more readily than carcinoma-simplex, and is further distinguished from it by its tendency to assume a lobulated form. It sometimes approaches the consistence of scirrhus; at other times it is softer, and more nearly resembles fungus medullaris. A great number of observations have convinced Professor Müller, that the consistence of this form of carcinoma is very variable, while its structure always remains the same, and is so peculiar that it may in all cases be recognized by the naked eye on making a section of the growth. Indeed, with the exception of cancer alveolaris, no form of carcinoma can be so readily distinguished. By far the greater number of cancerous degenerations of the female breast belong to this class.* Carcinoma reticulare is composed of a grey mass made up of globules, and imbedded in a reticulated fibrous tissue, which is not seen until after the removal of the grey granular mass. The grey mass consists of transparent formative globules or cells similar to those of carcinoma simplex. These globules likewise often contain two or more smaller vesicles with nuclei of a pale colour. In

* Müller on Cancer and Morbid Growth, page 45.

other cases, however the smaller germinal cells could not be distinguished within the interior of the larger formative globules, which were then found to contain a number of small granules. Occasionally these granules were present in great number in the interspaces between the cells, and in some of them a molecular motion was distinctly evident. The cells themselves had a diameter of 0.00022 to 0.00039 or 0.00043 of an English inch, while the diameter of the granules contained within them did not amount to one-fourth or one-fifth of that size.*

The white, or yellowish white, reticulated figures, which are always more or less distinctly evident in this form of cancer, present a very peculiar appearance. These figures are irregularly reticulated; sometimes they present a branched arrangement, at other times they appear in spots. They are peculiar formations, not dilated vessels with thickened parietes, such as are sometimes seen in carcinoma simplex, but they are produced by the deposition of grains of white matter in the grey mass. These grains do not appear to be cells, but generally seem to be made up of opaque granules

* Müller on Cancer and Morbid Growth, page 46.

agglomerated together, so as to form roundish or elongated corpuscles. These corpuscles are usually of a round or oval shape; sometimes however they are elongated, and it is not uncommon for them to be much longer than they are broad. They are two or three times as large as the red particles of the blood, their greatest diameter being 0.00076 of an English inch. This structure of the white substance of carcinoma reticulare is not, however, in general evident to the naked eye, nor even with the aid of a lens; but the corpuscles of which it is composed are usually so distributed through the grey matter, as to present the appearance of a white net-work. If these white figures are examined under the simple microscope with a magnifying power of eight or sixteen diameters, the corpuscles of which they are composed may be distinguished. A higher magnifying power exhibits the granular appearance of these corpuscles, which, when seen by transmitted light, of course appear dark. Lastly, we may isolate these bodies under the compound microscope, and convince ourselves that they are formed by the agglomeration of small granules, either perfectly opaque, or but slightly pellucid.

These white granules are not rendered transparent either by acetic acid or by alcohol. The white corpuscles which form the reticulated figures of carcinoma reticulare accumulate more and more as the development of the disease proceeds; and by the time that disorganization commences in the structure, they form a great part of its texture. Often they lie in large masses, imbedded in the surrounding tissue, or invest with a cream-like lining the interior of cavities which may have formed in the diseased growth. They also, as might be expected, make up a portion of the softened matter, and purulent secretion yielded by the ulcerated surface. Occasionally, in carcinoma reticulare of the female breast, cavities form in the interior of the structure. Once Professor Müller observed a large cavity, the walls of which were completely occupied by white corpuscles. Masses of this sort extend, still preserving their reticulated figure, and may be separated in large portions of a soft consistence, for the purposes of chemical analysis. The matter composing them is found to be very similar to coagulated albumen.

As the development of the disease proceeds, the reticular figures readily become confluent,

and they appear like irregular white spots : when this occurs, the mass presents some resemblance to the first appearance of white tubercle in a grey tissue. In one specimen of cancer reticularis mammæ, Professor Müller observed, throughout its tissue, many little cavities varying in size from that of a millet-seed to that of a pea, filled with a yellow, puriform, or cheesy matter. These cells were furnished with distinct walls, but their cavities communicated here and there with each other, so that the contents of several cells could be squeezed out through an opening in one. The large ramifications of these cells gave off smaller branches. The interior of even the *smallest cells*, the *diameter of which* did not exceed *half a line*, was found to be furnished with a *distinct lining membrane*, to which *blood vessels* were *distributed*. The matter which these cells contain must not be confounded with the white globules shown through the reticulated figures, although it is possible that both may have a common origin. In the instance just spoken of, the white reticulated figures formed here and there large masses, which were merely imbedded firmly in the surrounding tissue, and did not exhibit the slightest approach to a cellular

structure. In another part of the same morbid growth was a carcinoma alveolare of the size of a hazel nut, the cells of which were filled with a jelly-like matter. Müller has frequently seen patches of carcinoma alveolare, forming part of the morbid growth, in cases of carcinoma simplex mammæ. It is scarcely necessary to remark, that the reticulated figures of this form of cancer have no relation to the structure of the mammary gland, since Müller has observed the same texture in carcinoma of many other organs. Carcinoma reticulare is sometimes developed slowly, at other times with great rapidity. In by far the greater number of cases, it returns after having been extirpated. Professor Pockels, however, informed Müller, that in one instance he extirpated a cancer which actually belonged to this class with perfect success.* Some other cases might also be enumerated.

CARCINOMA ALVEOLARE.—This form of carcinoma was described in Germany by Otto, as a peculiar species of scirrhus of the stomach, and in France by Laennec and Cruveilhier, under the names of “Cancer gelatiniforme,” and

* Müller on Cancer and Morbid Growths, p. 49.

“Areolaire.” The description which Otto has given* represents the main feature of this degeneration (which always appears under one form) so exactly, that it may be detailed as affording a good illustration of the general anatomical character of the disease.

The scirrhus occupied more than two-thirds of the whole stomach, and extended from the pylorus over a width of more than seven inches of its anterior and posterior wall. The walls of the stomach were so thickened at the diseased parts, that they did not collapse. In several places they were two inches and a half in thickness. The surface of the scirrhus part was uneven and tuberculated. Otto says that its substance differed so much from that of ordinary scirrhus, that, perhaps, it ought not to be referred at all to that class of diseases. The basis of its structure was composed of innumerable white fibres and laminæ crossing each other in all directions, and having their interspaces occupied by cells which varied in size from that of a grain of sand to that of a large pea. Some of the cells were closed, but

* Seltene Beobachtungen zur Anatomie, Physiologie, und Pathologie. Breslau, 1816, tab. 1. Fig. 4.

many of them communicated with each other; they all contained a very viscous, clear, perfectly transparent jelly. Externally, the diseased growth was covered by peritoneum, through which the half-projecting sacculi and cells were seen. The inner surface of the stomach was almost entirely deprived of its lining wherever the disease extended; and most of the cells, both large and small, opened into the cavity of the stomach, into which, when firmly pressed, they poured their contents. The inner coats of the stomach were entirely destroyed by the disease, the muscular coat extended for a short distance into the morbid structure, but small cells filled with jelly-like matter were every where deposited between the muscular fibres.

The cases of carcinoma alveolare of the stomach, which Müller examined, corresponded so exactly to this description that he can but confirm it in all points. At the commencement of the degeneration, the mucous and the muscular coats of the stomach swell, and sections of the latter present that striated appearance observed in all forms of carcinoma of the stomach. The cellular structure containing the jelly-like matter develops itself between the bundles of the muscular fibre,

but the like process takes place at the same time in the mucous membrane. In the early stages of the disease the cells can be distinguished only by means of the microscope.

Occasionally, this cellular structure not only becomes developed in the stomach, but also forms isolated nodules in different parts of the surface of the peritoneum. In M. Pockel's museum at Brunswick, Müller observed such masses of cells which had formed on the abdominal peritoneum, in a case of carcinoma alveolare of the stomach. The smallest clusters of cells were scarcely larger than the head of a pin.*

The symptoms of this form of cancer, which occurs most frequently in the stomach, are, according to Cruveilhier, more obscure than those of any other variety of carcinomatous disease. It certainly is less prone than other forms of cancer to give rise to symptoms of general reaction, and is more slow in producing the *cachexia cancerosa*. Pockels observed neither pain nor vomiting; but the peculiar colour of the

* Engravings of carcinoma alveolare of the stomach, may be found in Otta, lib. cit. tab. 1. fig. 4. Cruveilhier *Anatomie Pathologique*, liv. 10. tab. 4. Carswell, *Pathological Anatomy*, fasc. 3, plate 1. fig. 8.

face which characterizes organic disease of the stomach was not absent. Though most often met with in the stomach, cancer alveolaris is not by any means confined to this organ; for Cruveilhier has seen it in the small intestines, in the rectum, cæcum, uterus, ovary, and in the bones; and Müller has also met with it in the intestines, in the female breast, in the great omentum, and in the peritoneum. The jelly-like matter contained in the cells preserves its transparency even if kept in alcohol; and if expressed from the cells, and boiled, it does not yield a trace of gelatine. After boiling for eighteen hours a portion of cancer alveolaris which had been macerated in alcohol, nothing was dissolved but a small portion of a substance somewhat allied to salivary matter; not precipitated by any reagent, even by tannin, and of the existence of which evaporation afforded the only evidence.

Cruveilhier distinguished between "cancer areolaire gelatiniforme" and "cancer areolaire pul-tacé;" the cells of the former contain a transparent jelly, those of the latter a turbid pul-taceous matter. He has observed the latter form in the uterus and in the bones.* The case

* Anat. Pathologique, liv. 24, tab 2, fig. 1; and liv. 27, tab. 2.

which he relates of "cancer alveolaire pultace" of the skull is very remarkable, and the representation he gives of it is very interesting.* The diseased bones were the frontal, the ethmoid, the inferior turbinated bones, and the vomer. The morbid growth extended both outwards and inwards, and had attacked the mucous membrane of the nose, and the dura mater. A somewhat similar structure was once observed by Professor Müller in a breast which M. Dieffenbach had removed. In this instance the very firm puriform matter was contained within cells which had numerous communications with each other, and was lined by a membrane evidently vascular. Some lobules of this tumour were completely permeated by these cells, while other parts of the same growth presented no trace of this structure but only the ordinary network of carcinoma reticulare. In the remarkable case of "cancer pultace" of the skull above mentioned, M. Bontin Limousinean, assistant to M. Gay Lussac, analysed the yellow matter from the cells, and found that it contained caseine. The matter had in this case the colour of tallow.

* Anat. Pathologique, liv. 21, tab. 1.

Professor Müller obtained the following results from microscopic examination of carcinoma alveolare of the stomach. If the smaller cells are looked at under the microscope, they are found to contain encased within them many still smaller cellules, which in their turn include others of yet more diminutive size. In the smaller cells the darkish yellow parietal nucleus is distinctly evident. Many cells, likewise, contain mere nuclei, free within their cavity, as cytoblasts from which new cells are to be afterwards developed. The walls of the largest cells are distinctly fibrous, and their fibres run from one cell to another. Twice Professor Müller observed rod-shaped crystals in the jelly-like matter of preparations which had been kept in spirit; and on another occasion he saw spindle-shaped corpuscles in the jelly from a cancer alveolaris of the breast. The history of the development of carcinoma alveolare corresponds exactly to that of the primitive formation of cartilage and of the chorda dorsalis, as described by Schwann. The young cells are produced from cystoblasts, or nuclei developed in the interior of the parent cell; and although the parent cell continues to increase in size, these young cellules by degrees fill up its cavity. At

length the walls of the young cells come in contact with each other, and they form together with the parent cell, within which they are encased, one compound cell. Thus the process of development goes on, till the larger cells on the internal walls of the stomach burst, and pour their jelly-like contents into its cavity. The fibres forming the walls of the largest cells constitute a nidus within which younger generations of cells are developed. In order, however, to observe the manner in which the cells are encased one within the other, and the relation they bear to their nuclei, it is necessary to examine them in an earlier stage, and before their walls have begun to be split up into fibres. The main point distinguishing carcinoma alveolare from carcinoma reticulare and carcinoma simplex seems to be, that in the former the cells continue to grow, and the walls become adherent to each other, while this progressive development and mutual cohesion do not take place in the delicate cellular globules of the two latter forms of cancer.*

FUNGUS HÆMATODES, OR SOFT CANCER.—

* Müller on Cancer and Morbid Growths, p. 54.

This disease we believe was first particularly noticed by Mr. John Burns in the shoulder and inferior extremities, under the name of spongioid inflammation, and afterwards by Mr. Hay, of Leeds, by the title of fungus hæmatodes. In the classification of Mr. Abernethy, it is distinguished by the name of medullary sarcoma, and upwards of thirty years since was described by Mr. Wardrop; who states "that when it appears in the external parts of the body, and has not yet acquired a considerable bulk, instead of being hard and unyielding, it is soft and elastic, and has an equal surface, giving, in most cases, more or less, a sense of obscure fluctuation. Its form, when taken out of the body, is determined and accurately circumscribed, having generally a distinct covering of condensed cellular membrane. In place of the hard, fibrous-looking substance, the principal component part of scirrhus tumours, the morbid growth in fungus hæmatodes consists of a soft pulpy matter, which mixes readily with water, and is hardened by acids, and by boiling in water; and it has been compared, by all who have attempted to describe it, to medullary matter, in colour and consistence. When the skin covering fungus

hæmatodes has been eroded by the progress of the disease, instead of the morbid growth being destroyed by ulceration, a fungus arises from it, and the tumour seems only to increase more rapidly in bulk. If the fungus hæmatodes is not intercepted in its progress, both the original tumour, and the fungous mass growing from it, attains a large size; and the fungus, instead of having a firm texture, like that which arises from a cancerous ulcer, is a dead red and purple coloured mass of an irregular shape, and of a soft texture, is easily torn, and bleeds profusely when slightly injured.

This disease attacks persons of all ages after puberty, but more frequently in early life, than scirrhus tubercle; does not feel so hard, and when pressed upon by the finger, the spot receives an indentation, which instantly fills again upon the removal of the finger. At first there is little pain, and the patient can bear it pressed upon and roughly examined. Sir Astley Cooper states that this disease may advance even to suppuration and ulceration without the glands in the axilla becoming at all affected, and when removed by the knife, it will rather show itself, (should it appear again,) in some distant part of

the body, than in the glands of the axilla. It increases rapidly. In a few months, it acquires some magnitude; for an unnatural growth once formed, each arterial pulsation that administers nourishment to the natural body augments its growth, not in the same ratio as the other parts of the body, for the disease gains the ascendancy. The skin covering it is of a livid colour, and large veins can be easily traced, pursuing their course in a tortuous direction. The tumour is soft, and gives the sense of fluctuation when pressed, and if punctured with a grooved needle, a dark coffee-coloured fluid will be seen to escape, composed of the red particles of blood, serum, and bile. But sometimes the fluid is perfectly transparent, or if ulcerated, a gleety fluid mixed with blood is discharged.

The disease pursuing its rapid progress, inflammation is excited, the cyst bursts, and nature attempts to relieve by exciting in the parietes of the cyst the adhesive process; but failing in this attempt, owing to a peculiarity of constitution, a fungus sprouts forth. In a short time it becomes a considerable size, and the discharge from it is enormous, which has a very disagreeable smell, enabling a surgeon to distinguish its

character upon entering the room of the patient. The disease has a continued disposition to slough, and Mr. Cline had a patient who was discharged cured from the hospital, the disease having terminated in this manner.

It was the opinion of Mr. Wardrop, that fungus hæmatodes was a changed structure or morbid structure of the nerve, which will appear by the following observation.

“ It appears certain, that in all those cases in which the disease affected the eye-ball, we were ignorant of its existence, before either the optic nerve or retina were changed. In all of the cases, an alteration in the structure of the retina, and an imperfection in the exercise of its functions, were the first symptoms of the disease; and in those cases where the disease advanced farther, no remains of the retina could be detected, and the structure of the optic nerve itself was changed, even in some, as far as the thalamus. In one case, the optic nerve, besides its alteration in structure, was split into different portions by the tumour, which latter seemed to be formed in its external structure. In another case, the medullary portion of the nerve was changed, and the disease extended just to that

place, where it loses its neurilema, and becomes altogether medullary. In other cases, the neurilema and medullary portions were equally changed. When we reflect upon the great number of parts that this disease affects, we must own that it is extremely difficult to form any conclusion, and that it still remains an object of most interesting enquiry."

Fungoid Disease consists of a tumour, or tumours, of a whitish, pulpy, brain-like substance; generally soft, circumscribed, elastic, or obscurely fluctuating; giving rise to large vascular growths, which bleed profusely; always connected with constitutional vice; contaminating the frame and terminating fatally.

This is the most malignant formation to which the body is liable. When it appears covered only by the integuments, and has not yet acquired considerable bulk, the surface of the tumour which it forms is smooth, generally equal, and not discoloured; it is commonly soft and elastic, and communicates to the touch an obscure sense of fluctuation. When removed from the body, the hæmatoid tumour is generally circumscribed, and more or less rounded; it frequently possesses a capsule of condensed cellular

membrane. M. Laennec has divided the disease into—1st, The encysted ; 2dly, The irregular and non-encysted ; to which he has added, 3dly, The interstitial impregnation of organs by the cerebriform substance. This last is not mentioned by Mr. Wardrop, who has described this disease with great accuracy. M. Laennec has never met with it in the lungs. It may be, therefore, considered as a rare form of the disease. When divided, the substance soils the knife, and is composed of an opaque, whitish, homogeneous matter, resembling, in colour and consistence, the *cerebral* pulp. Hence the name *enrephaloid*, given it by the French pathologists. It softens after exposure for a short time to the atmosphere ; and when the softer flesh is washed away, or when the mass is compressed, a filamentous or fine cellular tissue remains.

“ The consistence of the hæmatoid tumour
“ varies in different cases, and sometimes in different parts of the same mass—being sometimes more dense than the firmest brain ; at other times as soft as the brain of a foetus, as the milt of a fish, or even not much firmer than custard. According to M. Lobstein, the different degrees of softening are owing to the

“ progress of the disease ; and this appears to
“ be generally the case. In the first stage, or
“ that of crudity, the melanoid tumour has the
“ consistence of a firm brain, or of the conglo-
“ bate glands ; in the second, the consistence is
“ less, being that of the foetal brain ; in the
“ third, it approaches that of milk or custard ;
“ to these may be added a fourth, when the
“ tumour is situated externally, or near the
“ surface of an organ or part, viz., that attended
“ with ulceration and the rapid production of
“ bleeding fungi from the ulcerated part.”

“ The colour of this production varies some-
“ times in the same mass. It is commonly of
“ the colour of brain ; occasionally portions of
“ it are redder, and exhibit more of a fleshy
“ appearance ; and in other cases, parts of it
“ resemble a clot of blood. When the hæmatoid
“ mass is encysted, it is readily detached from
“ its capsule ; and, in the early stage, is often
“ divided into several lobes, placed closely
“ together, and separated by an extremely fine
“ cellular tissue, which seems to convey the *vessels*
“ for its *nutrition*. In the advanced stages, the
“ division into lobes disappears. The non-
“ encysted form is, however, more common, par-

“ ticularly in the viscera. The masses consti-
“ tuting this formation vary from the size of a
“ pea to that of the head of a foetus at the full
“ time.”

“ The medullary structure, although the
“ general, is not the only form observed in the
“ primary diseased mass. Some of the fungoid
“ productions are composed of distinct parts,
“ provided with cellular capsules, and differing in
“ size, colour, and consistence. Some of these
“ parts resemble slightly softened glue ; others
“ have earthy particles mixed with the pulpy
“ cerebriform matter ; many present insulated
“ portions of the colour and consistence of
“ boiled yolk of egg. As the tumour increases,
“ the softening and disorganization character-
“ izing the successive stages of its growth takes
“ place. Disorganization generally commences
“ in the central parts ; cavities now form in it,
“ chiefly containing blood ; and when the blood
“ is washed away, and the tumour is placed
“ in water, numerous membranous shreds and
“ filaments are seen floating in these cavities.”

“ If the fungoid mass is situated near the sur-
“ face of an internal viscus, discolouration of,
“ and adhesion to, the part covering it, followed

“ by ulceration, takes place. But the ulcerative
“ process, instead of giving rise to loss of sub-
“ stance, produces a fungoid growth, and, as
“ well as when the tumour forms exteriorly, the
“ increase of bulk, which had hitherto been
“ slow, now becomes rapid.”

“ The fungus which thus forms is soft, easily
“ torn, of a dark-red or purple colour, of an
“ irregular shape, and bleeds profusely when
“ slightly injured; and differs from the firm,
“ dense structure of the cancerous fungus. It
“ resembles, when small, the softer kinds of
“ polypous vegetations which form on mucous
“ surfaces. When the primary hæmatoid tumours
“ are situated towards the surface of the body,
“ they increase in size more rapidly than when
“ seated internally. They generally soon lose
“ their uniform round and smooth appearance;
“ they project considerably, and at last become
“ irregular at their surface. Their consistence
“ diminishes, particularly in the projecting por-
“ tions, where the soft elasticity passes into
“ obscure fluctuation. The veins running over
“ or from the diseased mass, assume a varicose
“ appearance; an erysipelatous-like redness of
“ the prominent parts supervenes, followed by

“ lividity, adhesion of the integument to the
“ tumour, ulceration, and soft, reddish, fungous
“ excrescences. The growth of the tumour is
“ now remarkably rapid. The surface of the
“ fungi exudes a thin foetid sanies, often with
“ blood, which is sometimes discharged in great
“ quantity ; hence arose the name fungus hæma-
“ todes, which applies only to the advanced stage
“ of the malady. When the fungus is very
“ large, its more prominent parts often lose their
“ vitality, and separate in most offensive sloughs.”

“ In some cases, the voluntary nerves have
“ been connected with the diseased mass, and
“ have participated in the change of the struc-
“ ture ; but they have not been found changed
“ beyond the limits of the tumour. In the eye,
“ the optic nerve is always changed in structure ;
“ and in a case referred to by Mr. Wardrop, the
“ anterior crural nerve passed into the centre of
“ the diseased mass, and was so completely lost in
“ it, that it was impossible to distinguish between
“ the two structures. This appearance being
“ general whenever large nerves enter in the
“ hæmatoid tumour, has led M. Maunoir to infer
“ that the cerebriform matter composing it is
“ nothing else than a morbid accumulation of the

“ nervous pulp. This opinion is combated by
“ M. Lobstein, who avers that he has met with
“ cases in which, particularly in early stages of
“ the disease, the nerves passed through the
“ tumour without experiencing any change. I
“ am, however, disposed to doubt this, at least as
“ respects the fully developed disease: if they
“ pass *through*, I believe, from the dissection of a
“ case which occurred to me, that they are *always*
“ *changed*, and identified with the morbid mass;
“ if they pass merely *by it*, or between insulated
“ portions of it, no change will be observed.”

“ The most remarkable characteristics of this
“ disease are—1st, The frequent simultaneous
“ occurrence of a number of the tumours con-
“ stituting it in different parts of the body the
“ least connected with each other, either by
“ structure or function;—and, 2nd, That when
“ an apparently isolated mass of the disease is met
“ with in an extremity and extirpated, it always
“ soon afterwards manifests itself in some distant
“ part, either externally or internally; the sub-
“ sequent disease being even more rapid in its
“ progress than that preceding it. The simul-
“ taneous appearance of the hæmatoid tumours,
“ or their successive manifestation, although

“ sometimes observed to take place in the course
“ of the absorbent system, seem not to be always
“ propagated through this medium ; for in the
“ case of the diseased mass appearing first in one
“ of the lower extremities, the subsequent oc-
“ currence of it may not be in the glands above
“ the originally affected part, but in some distant
“ or internal organ, as in the lungs, liver, in
“ an upper extremity, &c.”*

“ Dr. Carswell is of opinion that the formation
“ of the fungoid and carcinomatous substance
“ takes place in the blood, whether it be formed
“ in this fluid alone or in other parts of the body
“ at the same time ; and he adduces the facts :—
“ 1st, That the morbid substance is found in the
“ vessels which ramify in these malignant tumours,
“ or in their vicinity ;—2dly, That it is found
“ in those vessels which communicate with the
“ diseased part of an organ ;—and, 3dly, That
“ it is met with in vessels having no direct com-
“ munication with an organ affected with the
“ same disease. The veins, however, and venous
“ capillaries, are the only parts of the vascular
“ system in which the diseased substance is
“ found : sometimes in contact with the internal

* Dr. Copland's Dictionary of Practical Medicine, p. 1049.

“ surface of the vein, or occasionally united with
“ it by means of thin, colourless fibrine, or even
“ of very minute blood-vessels, as in the case of
“ the cerebriform matter. In the articles referred
“ to, I have stated (Dr. Copland) that, when
“ this morbid substance is detected in the blood,
“ it has been absorbed, as in the case of other
“ morbid secretions; and the accuracy of the
“ opinion seems to be supported by the fact, that
“ it is found only in the veins and absorbents;
“ but Dr. Carswell believes that this is not the
“ case, as there are instances in which the venous
“ blood alone was the seat of the disease. If
“ such be actually the case, an obvious difficulty
“ presents itself; but various sources of decep-
“ tion arise in the course of minute researches,
“ and mislead even the most careful. That the
“ blood is early affected in this and other malig-
“ nant diseases, I fully believe; but that the cere-
“ briform matter is formed in it, and afterwards
“ deposited in the parts which are its seats, can-
“ not be supposed by the history and progress
“ of the local and constitutional affection. If it
“ were previously formed in the blood, wherefore is
“ it often deposited only in one situation?—where-
“ fore is it not excreted by the emunctories?

“ —wherefore does it not always affect a number
“ of parts simultaneously ?—wherefore is it never
“ found in the arteries, and so frequently in the
“ absorbents and veins proceeding from the
“ seat of disease ?—These, and other questions
“ that may be asked, cannot be answered consistently with this doctrine. I therefore entertain the same opinion as was stated by me in the article already referred to, and believe that, like carcinoma, it essentially depends upon a debilitated and otherwise morbid state of the system generally; and that the vital actions of the part or parts primarily and especially affected are depraved—that the nutrition, organic sensibility, and the secreting function of these parts are remarkably altered, and that the morbid product which results is partially absorbed into the circulation, and contaminates the fluids and solids, sometimes exciting a similar morbid action in other situations.”

“ Conformably with the best ascertained facts connected with the appearance of the cerebri-form matter in the vessels, it would seem, that at a somewhat advanced stage of the disease, or when this structure becomes more or less softened, the molecules of it pass into the

“veins and absorbents leading from the part in
“which they have been formed; that they are
“there sometimes aggregated into masses suf-
“ficiently large to admit of their recognition;
“that, although these masses are generally found
“merely in contact in the internal surface of
“the veins, they sometimes adhere to it by
“means of the fibrine which collects around them,
“as in every other instance in which a semifluid
“or partially concrete substance, or a secreted
“matter of greater consistence than the blood,
“passes into the circulation; and that, when
“they thus adhere to the internal surface of the
“veins, minute vessels are ultimately developed
“in the fibrinous envelope which has been formed
“around them.—The principal changes observed
“in the blood of those affected by this disease, and
“which I have had an opportunity of remarking
“in two cases after death, are an *unusual thin-*
“*ness—a deficiency of fibrine and red particles*
“*—a state of partial anæmia—and imperfect*
“*coagulation.* This state has been also remarked
“by Béchard, Velpeau, Andral, and Kerr, whose
“observations respecting the presence of the cere-
“briform matter, surrounded by a fibrinous en-
“velope, in the venous blood, fully confirm

“ the view I have taken of its origin in this situation, and militate against its primary formation in this fluid.”*

CARCINOMA MEDULLARE.—(*Müller.*) *Fungus medullaris*—first described by Mr. Burns,† under the name of “Spongoid” Inflammation; by Mr. Hey,‡ as “*fungus hæmatodes*,” by Mr. Abernethy,|| as “medullary sarcoma;” by Dr. Monroe,§ as “milk-like tumour;” and to which M. Laennec needlessly gave the name of “encephaloid,” appears in the present day to be scarcely employed to denominate other than a softer form of carcinoma. The discussions, whether or no Hey’s *fungus hæmatodes* and Abernethy’s medullary sarcoma were the same disease, are familiar to every one; as are the erroneous opinions of M. Maunoir,¶ who confounded *fungus hæmatodes* with aneurism by anastomosis,

* Dr. Copland’s Dictionary of Practical Medicine, p. 1052.

† Burns’s Dissertation on Inflammation. 1800. Vols. 1 and 2. London.

‡ Hey’s Practical Observations in Surgery. London. 1803.

§ Abernethy’s Surgical Observations. London, 1804.

|| Monroe’s Morbid Anatomy of the Human Gullet, Stomach, and Intestines. Edinburgh, 1811.

¶ Maunoir sur le Fongue Medullaire et Hematode. Geneve et Paris, 1820.

and imagined that in fungus medullaris there is a production of true nervous matter. English writers have applied the term fungus hæmatodes, as well as that of fungus medullaris, to all varieties of the softer forms of carcinoma, how different soever they might be in colour; and Mr. Wardrop* expressly says, that fungus hæmatodes may be white, or yellowish, of a reddish or dark red colour, and even brown. Much confusion was afterwards introduced into the subject, owing to some relation which these structures were supposed to bear to the vessels and nerves; but it is now allowed by all hands, especially since the appearance of M. V. Walther's† instructive observations, that both names are only different designations for accidental variations of the same structure. The different forms described by Meyen‡ likewise appear to Professor Müller to belong to the same species of morbid growths. This soft cancer, of the consistence of the brain

* Wardrop's Observations, on Fungus Hæmatodes, &c. Edinburgh, 1809.

† V. Graef's und V. Walther's Journal der Chirurgie und Augenheilkunde. V. B. page 189.

‡ Meyen, über die Natur parasitis cher Geschwulste, besonders über Mark und Blutschwamm. Berlin, 1828.

or of the placenta, may have not merely a whitish or yellowish-white colour, similar to that of the cerebral substance, or a blood-red hue, like the placenta, but it is subject to many other variations of colour; and sometimes the same morbid growth will exhibit all varieties of hue in different parts of its substance. These fungoid growths are highly vascular, and a successful injection makes them appear to be entirely composed of vessels; but in the recent state their other compound parts are at once evident to the naked eye. These are, in part, a medullary mass composed of globules or other corpuscles; and partly a tissue made up of delicate fibres, in the meshes of which the medullary portion of the growth is contained. When perfectly free from other matters, the medullary part of these growths presents a whitish or greyish-white colour. If a portion of fungus medullaris is cut in pieces and squeezed under water, the medullary corpuscles, which are very easily soluble, impart to the water a milky hue, more or less tinged with blood. The intensity of the red colour of fungus medullaris depends on the relative proportion of blood-vessels which it contains; but the blood patches, which are sometimes inter-

persed through the substance of the structure, are in part produced by the effusion of blood into the meshes of its tissue. The brownish hue which the ulcerated surface of fungoid growths presents, is probably produced by decomposed blood. The external form of fungus medullaris is often lobulated ; its appearance when cut or broken varies greatly ; sometimes it shows no trace of any definite arrangement of fibres, while at other times fibres are indistinctly seen, either running parallel to each other or intersecting each other irregularly, and in some instances displaying a radiated or tufted arrangement. In few cases, however, is this fibrous structure very distinct ; for the morbid growth may easily be torn in other directions than that in which the fibres seem to run ; and irregular pieces may often be broken off, though it is not possible to tear off a regular tuft of fibres. Fungus medullaris usually forms large tumours, which increase in size and number with great rapidity. In some rare cases it appears distributed in a great number of very small tumours. Such a specimen once came under Professor Müller's notice in the museum of Halle, where it had been deposited by Professor Blasius. The medullary

matter was deposited in innumerable small lobuli upon the omentum, intestines, mesentery, and mesocolon. Fungus medullaris may form in every organ and in all the vascular tissues in the human body. It is not prone to attack any part in particular, and is equally common in persons of all ages. It is sometimes developed on the surface of bones, at other times in their interior. When it appears on the surface of the tubular or flat bones, it receives a slight support from a peculiar skeleton formed of very delicate aciculæ or laminæ of bone, which, proceeding in a radiated manner from the surface of the bone, penetrate into the interior of the soft tumour.* The presence of these spiculæ, however, is not an infallible proof of the cancerous nature of a fungoid exostosis. Sir A. Cooper mentioned a case of fungus exostosis, containing spiculæ, which grew from the surface of a bone, but was permanently cured by amputation. If fungus medullaris has its seat in the interior of a bone, not merely does it fill up the cavity of that bone, but induces a state of atrophy in

* See Carswell's Pathological Anatomy, fasc. 3, plate 4, fig. 1 and 2, and Ebermaier, über den Schwamm der Schädelknochen, etc. Düsseldorf, 1829, 'Taf. vii. viii.

the osseous tissue, and reduces the substance of the bone to a mere shell, so that the slightest cause suffices to produce fracture. Professor Müller has seen the whole interior of the bones of the tarsus filled with fungus medullaris and the remains of their external shell surrounded by the soft cerebriform mass.*

When fungus medullaris occurs in the interior of a bone, it does not often happen that the bone becomes distended in a spherical manner, though even of this there are some rare instances. The relation of medullary sarcoma to scirrhus or carcinoma simplex is displayed by the fact, that after amputation of a scirrhus breast, real fungoid growths may occur in other parts, as many observations of Langstaff, Cruveilhier, and others abundantly show. This affinity is likewise further illustrated by microscopic examination, which shows that many structures comprehended under the generic term of fungus medullaris differ greatly from each other, and have nothing in

* Carswell, in fasc. 3, plate 4, of his work, gives representations of fungus medullaris in the interior of bone. In the specimen there delineated, internal and external fungus medullaris of the bones are combined. Consult also Cruveilhier Anat. Pathol. liv. 20, plate 1.

common but the softness of their texture. Several forms, which present no external differences from others, approach very nearly in structure to the most consistent species of carcinoma simplex, and contain similar cells or formative globules; the softness of their texture being produced by the presence of a great number of these globules distributed through a very delicate tissue. On the other hand, we have seen that carcinoma reticulare, a form of cancer which presents a very peculiar structure, varies in consistence from that of the hardest scirrhus, to that of fungus medullaris. Further, there are varieties of fungus medullaris, the exterior of which presents nothing peculiar or different from other forms, but which show a great particularity on microscopic examination, appearing then to be formed in a great measure of caudate or spindle-shaped bodies, or of cells, the development of which has been arrested while in the intermediate state between cells and fibres. At first, one might be tempted to separate this form from the rest, under the name of carcinoma closteroides; but more extended investigations prove that this division would be unwarrantable, for cases are met with in which, although the

medullary part of the morbid structure is composed principally of formative globules without caudate appendages, yet caudate bodies do occur in greater or less number among the round corpuscles. It will hereafter be seen that this variety of internal structure is met with also in the case of innocent albuminous sarcoma, which is sometimes composed of cells, while, at other times, it consists of caudate and spindle-shaped corpuscles so arranged as to produce the appearance of an imperfectly fibrous structure. This being the case, it appears to Professor Müller most proper to employ the term *fungus medullaris* as a collective name for different forms or stages of development of soft cancer, which undergo imperceptible transitions into each other. Müller's observations led him to refer to this genus the following varieties.

1. *Carcinoma medullare*, abounding in roundish formative globules, which make up the greater part of the medullary mass, though intersected by a delicate fibrous network.* The spe-

* On a former occasion, Müller noticed briefly this form of medullary fungus, in the Bericht über die zur Bekanntmachung geeigneter Verhandlungen der K. Academie der Wissenschaften zu Berlin December, 1836.

cimens which Gluge* examined seem to have been of this kind. The globules, which Gluge saw differed in size; the smallest were larger than pus globules, and had a diameter of $\frac{1}{125}$ of a millimetre. They were irregular, though approaching the spherical form; their border was transparent, but dark points and round lines were distinguished on their uneven surface. He likewise observed crystals of various kinds† in fungus medullaris. Professor Müller regards the formative globules of this variety of morbid structure as very similar to those of common cancer, and to those which constitute the grey mass of carcinoma reticulare; a few points, or very minute granules, were often all that could be detected in their interior; but frequently, on making use of a high magnifying power, a nucleus may be seen just as in other forms of carcinoma. The size of these globules is about the same as in common cancer, though they are subject to great varieties in this respect.

2. Carcinoma medullare, with an exceedingly soft cerebriiform base, composed of pale, elliptical

* L'Institut, 1837, No. 191. Auszug der Verhandlungen der K. Academie, zu Paris, vom. 2. January, 1837.

† Müller's Archiv. 1837. Heft, 5 p. 465.

bodies, without caudate appendages. Professor Müller is acquainted with but one specimen which he can refer to this class ; it was a case of cerebri-form fungus medullaris of the foot, and of the interior of the tarsal bones. With the exception of the vessels which were distributed to the diseased mass, its substance was almost entirely formed of uniform ellipsoidal corpuscles, which cohered but very slightly with each other. These corpuscles had a very pale hue when looked at under the microscope ; they were once-and-a-half or twice as large as the red particles of the blood, and equalled-them in breadth. Professor Müller in no instance observed a fibril proceeding from these bodies, nor did he even see a single nucleus or a young cellule in their interior ; a few very minute points were all that could be detected by the highest magnifying powers.

3. Carcinoma medullare, with caudate or spindle-shaped corpuscles. Sometimes, on tearing a piece of this kind of fungus medullaris, the torn surface will present a resemblance to a fibrous structure. This appearance is owing to several of the caudate corpuscles being arranged in one direction, as was observed in a case related by Valentin. Professor Müller has seen a

similar structure in several specimens of fungus medullaris ; sometimes interspersed in the midst of round formative globules, at other times forming the greater part of the growth. According to the directions in which the caudate corpuscles are disposed, a radiated appearance is sometimes produced, at other times the structure seems more tufted, while, in other instances, the direction of the corpuscles is so various, that the tumour does not display the slightest trace of fibrous texture. It is indeed not always easy (even when the caudate bodies are so disposed as to occasion a fibrous appearance) to tear the growth into tufts of fibres, although irregular portions of it may be broken off very readily. Frequently, however, the caudate corpuscles are arranged with great regularity. Their interior presents the appearance already described ; namely, it contains either a granular substance without any evident nucleus, or a nucleus with one or more nucleoli may be more or less distinctly seen. These corpuscles are prolonged at one or both sides, and in some rare instances at more than two sides, into fibrils of different length. They are cells, the development of which has been arrested in the stage of transi-

tion from cells to fibres. Since so many fibrous tissues in the embryo are formed from caudate cells, there is evidently nothing extraordinary in the occurrence of caudate corpuscles in morbid growths of very different physiological tendencies, in the innocent, as well as in the malignant; and consequently, no inferences can be drawn from their presence with regard to the character of the structure in which they occur. It is, however, much to be regretted, that, in the case of morbid growths formed of caudate corpuscles, minute anatomy does not assist in determining their innocent or malignant character. The only guide which remains is afforded by the tendency of cancer to interfere with the natural structure of surrounding parts, while those formations which are of a benignant nature leave the neighbouring healthy tissues unaltered. Thus, in an enormous innocent sarcoma of the conjunctiva, the eye remained unaffected. Since the caudate corpuscles are formed from round cells, the occasional co-existence of round cells with nuclei, and of caudate corpuscles, in the same medullary fungus, is not surprising. In addition to the constituents already described, microscopic examination shows that in all cases

of medullary sarcoma fat is present in the form of fat globules, which are few, and *not enclosed in cells*. This element exists in a similar manner in carcinoma simplex and reticulare.*

MEDULLARY SARCOMA.—This disease assumes a variety of forms, and attacks patients of all ages, generally those of tender years, or even the middle period of life. Sometimes its appearance may be traced to some exciting cause, at other times its approach is quite spontaneous. It affects most parts of the body; but we must here confine ourselves to the description of this disease as it attacks the breast. It begins with a soft enlargement or tumour, which is extremely elastic, and in some cases very painful; and as it increases, it often has the feel of an encysted tumour. Many swellings of this class give such an idea of fluctuation that the surgeon is frequently inclined to puncture them, when blood follows the withdrawal of the instrument: the bleeding occasionally continues for some time, but more usually speedily ceases. As the disease advances, the tumour becomes irregular, and apparently lobulated, bulging out here and

* Müller on Cancer and Morbid Growths, p. 66.

there, insinuating itself between the laminated structure of the adjacent parts, and forming a large mass, which often ulcerates and bleeds; while from the reticulated surface an irregular large fungus shoots up, having a dirty and malignant bleeding appearance, which proves the character of the tumours, if unknown previously. If a tumour of this class be removed and a section made, it has the appearance of a collection of brain-like substance and blood irregularly disseminated, softer at some parts than at others. At an early period of the appearance of a tumour of this class, extirpation may be serviceable in preventing the more rapid development of the disease, although it generally re-occurs at some other part of the body; but still its removal will most frequently prolong the life of the patient, when not delayed too long.

MELANOSIS.—This morbid production of the breast may exist, either in the form of a single mass encircled by a cyst, infiltrated into the glandular structure of the organ; in layers diffused on the surface of its membranes; or in the integuments covering the breast, sinking little, even into the cellular tissue. The masses are sometimes lobulated and oval, united by cellular membrane, but

said not to be penetrated by blood-vessels. Their size differs, being sometimes very small, at other times much bigger; and separated masses are occasionally found as large as a nut, or even much larger. This disease at its early stage is of the consistence of a lymphatic gland, homogeneous, with neither smell nor taste, and in its colour may be either opaque, brown, or black. After a time, varying according to the rapidity of the disease, “ramollissement,” or a softening takes place, when, upon applying pressure after the tumour has been removed, small black clots can be forced out, which are mixed with a thin reddish fluid, and when cut into have an appearance of reddish cerebriform masses, interspersed with patches of dark blood of a brownish or almost black colour.

Burch, to whom we are indebted for its chemical analysis, gives the following results:—1st. Coloured fibrine. 2nd. A dark colouring matter, soluble in *dilute sulphuric acid*, or in a *solution of subcarbonate of soda*, which fluid it *tinges of a red colour*. 3rd. A *small quantity of albumen*. 4th. *Subcarbonate of soda, phosphate of lime, and oxide of iron*.

CARCINOMA MELANODES.—(Müller.) “Al-

“ though melanosis appears as a peculiar morbid
“ growth, yet it is merely a variety of cancer-
“ ous degeneration, and terminates in the same
“ way as other forms of carcinoma. This simi-
“ larity is shown in the, by no means unusual,
“ combination of melanosis with other species of
“ cancer. Thus Professor Müller has often ob-
“ served carcinoma reticulare of the globe of
“ the eye and of the orbit combined with melan-
“ osis ; some lobules of the morbid growth being
“ more or less completely occupied by melanosis,
“ while other parts displayed the ordinary net-
“ work made up of white corpuscles, character-
“ istic of carcinoma reticulare. In several truly
“ cancerous degenerations of the eye and of the
“ neighbouring textures, which M. Jüngken ex-
“ tirpated, and which were afterwards placed as
“ preparations in the anatomical museum of
“ Berlin, this complication was by no means in-
“ frequent. Carcinoma melanodes is generally
“ lobulated, whether it forms the whole of a
“ morbid growth, or is merely interspersed
“ through the substance of some other form of
“ cancer. When it appears in the substance of
“ an organ, it forms masses more or less com-
“ pletely isolated. Microscopic examination

“ detects two forms of melanotic structure. In
“ both instances the basis of the structure is
“ formed of fibrous network, the stroma of mela-
“ nosis, within the meshes of which the mela-
“ noid matter is deposited. This matter is
“ generally composed of cells, filled with yellow-
“ ish or blackish granules. These cells are, and
“ always continue to be free, never becoming
“ coherent. Their forms are very various.
“ Many, indeed most, are round, oval, or irregu-
“ lar; some are elongated; a few actually cau-
“ date, terminating at one or both extremities
“ in a point, or in a fibril. Still more rarely
“ the cells present several points. They are real
“ pigment cells;* some of them are of a palish
“ yellow colour, others darker, while the interior
“ of others is stained of a dark brown by the
“ granular pigment they contain. It was but
“ seldom, and then only with difficulty, that
“ Müller succeeded in detecting, in one of the
“ larger cells, a nucleus with its nucleolus, inde-

* A short notice, by Professor Müller, of the caudate corpuscles in melanosis, appeared in Müller's *Archiv*. 1837. v. p. 466, Anmerkung. He likewise made some observations on the pigment cells of melanoid structure in a postscript to Schwann's third paper, in *Froriep's Not.* 1838, April.

pendently of the pigment granules. The diameter of the cells varies greatly; the largest are more than 0.00108 of an English inch in diameter; while smaller ones had a diameter of 0.00105, 0.00095, 0.00073, 0.00045, 0.00039, or even less, of an English inch. Different forms of the pigment cells are represented in plate 11, fig. 18, in Müller's work by Dr. West. They are all taken from a large lobulated melanosis of the lower jaw, which was removed, together with a large portion of the bone, by M. V. Graefe. The structure of the pigment cells and caudate corpuscles was precisely the same, in a specimen of melanosis of the eye, complicated with other forms of carcinomatous structure, which M. Jüngken extirpated; and also in some melanoid growths, which had formed simultaneously in different parts of the body, for which I am indebted to Dr. Baum, of Dantzic. It has not been determined with certainty whether the increase in number of pigment cells depends on the production of fresh ones within the parent cell, or whether new cells are formed external to the old ones. The pigment globules, when very small, display that molecular motion com-

“ mon to all very minute parts, even the glo-
“ bules of the pigmentum nigrum of the eye. The
“ pigment globules are seen not merely within
“ the cavities of the pigment cells, but also
“ strewn between them; and it is only in the
“ case of these free globules that the molecular
“ motion is observed. The existence of free
“ pigment granules, external to the cells, is
“ perhaps to be attributed to the bursting of the
“ cells, and the extravasation of their contents.
“ Many pigment cells are much smaller than
“ others; probably they are young cells which
“ have been set free by the bursting of the
“ older and larger cells, or possibly they may
“ have been formed external to them. More-
“ over, many cells, and especially many caudate
“ corpuscles, are of so pale a colour, as appa-
“ rently to be quite destitute of pigment. In
“ some specimens of melanosis, Professor Müller
“ discovered no pigment cells; but all the pig-
“ ment globules appeared to be free, and dis-
“ persed through the meshes of a fibrous tissue.
“ This was the case not merely in diffused mela-
“ nosis in the human subject, namely, in mela-
“ nosis of the peritoneum, and of the subserous
“ cellular structure without development of any

“tumour, but the same was also observed in a
“preparation of melanoid growths from the
“prepuce of the horse, which Professor Gurlt, of
“the Veterinary school, had the kindness to
“submit to Müller’s inspection. The pigment
“granules bore a great resemblance to those
“of the choroid coat, and, like them, had a
“distinct molecular motion. It is probable that
“in these two cases the formative organs of
“the pigment granules were dissolved, for the
“latter are always contained within cells, not
“merely in diseased structures, but also in
“healthy tissues.”*

CARCINOMA FASCICULATUM.—(*Syn. Hyalinum.*) Among the structures commonly included under the name fungus medullaris, are some altogether fibrous in their texture, and which correspond with other forms of that disease only in the softness of their tissue. The fibrous structure of these growths is immediately evident on breaking or dividing them. When torn they do not crumble, but are readily rent in the direction of their fibres. If examined under the microscope, they display neither the cellular

* Müller on Cancer and Morbid Growths, page 57.

globules of other varieties of carcinoma, nor the caudate corpuscles which give a fibrous appearance to some forms of fungus medullaris. The fibres often have a tufted arrangement, running in a divergent course from a common centre; in which case the masses may be rent into radiated bundles, the apex of which is directed towards their point of insertion, their base towards the uneven surface of the tumour. Or, some of these tufts of fibres are arranged in one way, some in another, large masses of fibres forming but one tuft, while in other places they are divided into many; and all of these bundles of fibres are intertwined with each other, as is seen on attempting to tear their tissue. In this case the tumour very frequently forms lobules of various sizes, both externally and in its interior. Between the lobules are membranous septa, from some one of which a tuft of fibres springs, and, after running for some distance, curves over and is inserted into another septum. These lobulated tumours with a soft fibrous structure often attain a very great size. In some instances, however, there is no distinction of the tumour into lobules, but the whole growth is formed of one large tuft of fibres, (having a radiated ar-

rangement,) and presents only a slightly uneven surface. The growths are extremely vascular and their vessels follow the same arrangement as the fibres, observing a penecillous distribution through the interior of the structure, and forming a vascular network on its blood-red, ulcerated surface. Occasionally, the substance of the growth is transparent, like jelly ; it was so in an exceedingly malignant tumour which once came under Professor Müller's observation. A fungoid tumour had formed in the breast of a good-looking young woman, who was treated by Professor Diefenbach, in Berlin, and by Professor Betschler, in Breslau. The disease returned after extirpation ; and after the application of the actual cautery to its neighbourhood and to the axilla, its development proceeded with increasing rapidity. Fourteen days before the patient died she gave birth to a child. On examining the tumour when first extirpated, it was seen to be composed of fibres which had a tufted arrangement ; but the circumstance of its being transparent, like glass, induced Professor Müller to name it carcinoma hyalinum. Subsequent observation, however, having shown that transparency is not an invariable character of this form of cancer,

the name of carcinoma fasciculatum was adopted as preferable. The fibres of carcinoma fasciculatum are extremely pale and transparent, so that it is only by damping the light very much that they can be distinctly seen under the microscope. Their surface is beset here and there with granules, as with an incrustation. These fibres have the same diameter as those of cellular tissue, to which, however, they do not in any other point bear the slightest resemblance. Müller is unable to say whether softness is an invariable character of carcinoma fasciculatum, or whether, as indeed is very probable, there are not firmer forms of this structure, as there are of carcinoma reticulare. In organs affected with cancer, fibrous masses may often be observed, which differ greatly from this fasciculated form of carcinoma ; while in the firmness of their substance, and in the complete entanglement of the bundles of fibres of which they are composed, they resemble the benignant fibrous tumours of the uterus and of other parts. Sometimes the skin covering cancer of the breast becomes thickened, is rendered more dense than natural, and displays when divided, a similar complicated intertexture of fibres. Lastly, in carcinoma of the stomach,

in addition to the striated appearance which the swollen muscular coat of that organ usually presents when divided, Müller has frequently noticed membranous capsules, containing masses made up of bundles, all arranged in one direction.*

In order to investigate fully the treatment of diseased structure, and give every opportunity of entering into our views, or rather the reflections that have, and may, enable us to point out an improved mode of treatment, of malignant, and even other diseases, we take this opportunity of quoting some remarks from undoubted authorities; which, we trust, are not only interesting, but will tend to enlighten the mind to a more comprehensive idea of the subject; most difficult to investigate as to its true nature, its first manifestation and progress. That chemistry will ultimately remove the darkened cloud that now hangs over this subject, and that we may be enlightened on many points, is our strongest wish and anticipation; and we sincerely trust that this period may not be far distant.

The blood furnishes the materials for the formation and growth of every part of the body :

* Müller on Cancer and Morbid Growths, p. 69.

it contains within itself the elements of the several tissues, and all the new elements into which these tissues are resolved when no longer fit to form a constitutional part of the frame. It will not be easy, therefore, to overrate its importance, or the advantage to be derived from an accurate acquaintance with it. The quantity of blood contained in the adult is variously estimated at from eight to thirty pounds. Valentin estimates it at thirty-four and a half pounds for the male and twenty-six pounds for the female, when both have attained their maximum weight.* The blood when drawn presently forms a red clot, composed partly of fibrine, while the serum contains a large quantity of albumen. The colour of the clot is owing to a compound which has been called hæmotosine, which has many properties in common with albumen; but the globules of the blood, in which the colour naturally resides, are not composed of hæmotosine alone, but contain another albuminous compound, to which the name of globutine has been given.

The following table gives the results of two careful analyses of blood by Lecanu:—

* Hooper's Vademecum, p. 24.

	Human	Blood.
Water	780.145	785.590
Fibrine	2.100	3.565
Colouring matter (hæmatosine & globutine)	133.000	119.626
Albumen	65.090	69.415
Cystalline fat	2.430	4.300
Oily matter	1.310	2.270
Extractive matter (soluble in water and alcohol)	1.790	1.920
Albuminate of soda	1.265	2.010
Alkaline chlorides, carbonates, phosphates and sulphates	8.370	7.304
Carbonates of lime and magnesia, phosphates of lime, magnesia, and iron, peroxide of iron	2.100	1.414
Loss	2.400	2.586
	<hr/> 1000 000	<hr/> 1000 000*

Knowing the component parts of the blood in a healthy state, we may hereafter become acquainted with what chemical changes take place where cancer exists, and what further changes result, as this disease becomes more advanced. On this subject we are not at present prepared to make any observation; but trust, as we advance in our tests and analysis, that we may be able to discover some interesting particulars on this subject.

* Turner's Chemistry, p. 1192.

The blood is supposed to have an independent principle of life. The best argument in support of this view, is the fact that blood is developed in the ovum previous to the formation of vessels. The blood exercises a most important influence on the functions of all the organs of the economy, nor can its composition be naturally changed without serious consequences to health. These changes consist in a variation in the relative proportion of its constituent parts, in the admixture of certain substances foreign to its composition in health.

It has been stated, as a general average, that the crassamentum amounts to about one-third of the weight of the serum; and perhaps this may not be far from the truth.*

Hewson, to whom we are principally indebted for many facts, found that *sulphate* and *muriate of soda* and the *nitrate of potash* were amongst the most powerful salts to prevent the coagulation of the fibrine, so much so that if we add to a portion of blood rather less than one-twentieth part of any one of them, the coagulation does not take place.†

* Bostock's Elementary System of Physiology, p. 265.

† Bostock's Physiology, p. 269.

The cause of the coagulation of the fibrine has never been satisfactorily explained, and what renders the subject more difficult is, that there are some circumstances which affect the coagulation of blood in a manner that we are quite unable to explain. Many causes of sudden death have this effect; lightning and electricity;* a blow upon the stomach, or injury to the brain; the bites of venomous animals, such as the viper and the rattlesnake; some acrid vegetable poisons, as laurel-water; also excessive exercise, and even violent mental emotion, when they produce the sudden extinction of life, prevent the usual coagulation of blood from taking place.”†

Perhaps the most obvious and consistent view of the subject is, that fibrine has a natural disposition to assume the solid form, when no circumstance prevents it from exercising this inherent tendency.‡

Sir Everard Home brought forward, founded upon the microscopical observation of Mr. Bauer,

* This is denied by Sir C. Scudamore.

† Bostock's Physiology, p. 270, and Hunter on the Blood, p. 26.

‡ Bostock's Physiology, p. 271.

a curious series of facts relative to the coagulation of blood. It is stated that a quantity of carbonic acid is always present in the blood; that during the coagulation this acid is extricated, and that by its extrication it forms linear passages or tubes in the substance of the blood, into which the vessels of contiguous parts are elongated, and which appear to be the new elements of future arteries.*

The experiments of Dr. Stevens prove that the saline matter contained in the serum, is also essential to the process, or at least to the change of colour, by which it is indicated. He distinctly shows that strong solution of nitre and of other salts produce in venous blood a colour even more florid than that produced by exposure to oxygen, while arterial blood when deprived of its saline matter, becomes even darker than venous blood in its ordinary state.†

Mr. Bauer first detected globules in serum, where he observed them to be actually generated while the fluid was under examination. Minute spots made their appearance, which gradually increased in bulk, until some of them attained

* Bostock, p. 275.

† Idem, p. 286.

the size of the globules of the blood when deprived of their colouring matter. We are informed that these globules are generated in serum after it has been removed from the vessels for some days; it would appear therefore to be independent of any property in the fluid that is connected with vitality, or its tendency to organization.* Sir E. Hoime gave them the name of lymph globules; Mr. Bauer afterwards observed these lymph globules in the coagula of an aneurism where they exist along with the ordinary blood globules, the lymph globules being in greater proportion in the older coagula, until it appeared that the oldest were almost entirely composed of them. The globules of these coagula were $\frac{1}{2800}$ of an inch in diameter, and were supposed to be the same that had been previously observed in the serum. The buffy coat of inflamed blood is said to consist almost entirely of these lymph globules; a circumstance which appears somewhat inconsistent with the fact previously noticed of their being found in greater abundance in old coagula, and with a remark that is subsequently made, that in *tumours*, the *firmer and*

* Bostock, p. 287.

older parts are principally composed of the lymph globules, and the more recent, principally of the *ordinary blood globules*.*

The great importance of the blood in the animal economy as the source whence all the parts of the body derive their immediate support, and new matter is obtained to repair the *waste* occasioned by the exercise of our various functions, induced the earlier physiologists to regard this fluid as the prime seat and direct cause of all diseases.

This doctrine is tacitly assumed by Hippocrates, and was strenuously insisted upon and greatly amplified by Galen; who laid it down as the basis of all his elaborate hypotheses, that changes in the state of the blood were the cause of every deviation from health, and likewise that an original difference in the nature of the fluids gives rise to those different conditions of the constitution called temperaments. This doctrine, which obtained the name of the humoral pathology, was generally adopted by Galen's successors, and maintained its ground, without ever being called in question, for many centuries. Even after the chemists had subverted most of Galen's dogmas,

* Phil. Trans. for 1820.

and had produced a total revolution in medical practice, the blood was still regarded as the origin of diseases, and they were ascribed to an acid, an alkaline, a watery, a saline, a putrid, or some other imaginary condition of the fluids.*

The first regular opposition which was made to the humoral pathology was by Baglivi, who maintained, in a very unequivocal manner, that disease more frequently originates in the solids than in the *fluids*, and that any change in these latter is to be regarded as an effect and not as a cause. From this time, however, the solids were more or less regarded as influencing the state of the constitution, until the humoral pathology received its most formidable attack from Cullen. Since his time the doctrine of solidism may be considered as forming the prevailing tenets of the medical schools, and is the one to which we usually have recourse for our explanation of the phenomena of the animal economy, which are supposed to be connected with its morbid changes. Upon the whole, there can be little doubt, that both our original temperaments and our subsequent diseases are more affected by the condition and properties of the muscles

* Bostock, p. 299.

and the *nerves*, than by any physical or chemical differences in the nature of the blood; yet, the solidists have gone too far in asserting that there is no original difference in the state of the fluids. When we consider the various sources from which the chyle is derived, we might rather suppose that it would vary in its properties in different cases, than that it should possess a constant uniformity, nor are we in possession of any experiments sufficiently decisive to authorise us in asserting that this absolute uniformity exists.*

The general conclusions that we may form respecting the nature of the blood are, that it is a compound fluid, consisting of several ingredients of various physical and chemical properties, dissolved, or at least suspended, in a large quantity of water. Of these the fibrine and the colouring matter are disposed to unite, to separate partially from the water, and to form the crassamentum or clot, to which the iron is also attached. The albumen, the uncoagulable matter, and the salts, remain in a state of solution in the water, and compose the serum: by

* Bostock, p. 300

heat the albumen is rendered solid, and may in this way be detached from the serosity, which consists of a portion of water holding in solution the uncoagulable matter and the salts. By slow evaporation part of the salts may be procured in the crystalline form, but the whole of the saline matter can only be obtained by calcining the residuum after evaporation, when the animal matter is consumed, and the neutral and earthy salts left behind, although probably in a different state of combination from what they originally possessed.*

Condiments and medicines differ in one essential circumstance from the articles of diet; that whereas the latter are always resolved into their ultimate elements, before they contribute to nutrition, the former act in their entire state, and when decomposed cease to produce their appropriate effects. Some of the substances which possess the most powerful actions over the system are derived from the vegetable kingdom, and are therefore composed of the same elements with our ordinary articles of food, only combined in different proportions; and even the

* Bostock, p. 302.

most active mineral or metallic substances become inert when they are resolved into their elementary constituents.

There is perhaps no substance whose operation on the animal economy is more violent than the hydrocyanic acid; yet this is entirely composed of carbon, hydrogen, and nitrogen. The acid extracts and the narcotic alkalies that are procured from vegetables, all consist of different proportions of oxygen, hydrogen, and carbon, to which in some cases a quantity of nitrogen is added. The pure metals appear to exert no action upon the system, although many of their oxides and salts are so acrid. Phosphorus differs from other bodies of the same class, in being more active in its simple than in its compound state. The three elementary bodies, *chlorine*, *iodine*, and *fluorine*, which agree in many of their chemical relations, resemble each other in their powerful action on the living body, and this violence of action they retain both in their simple and in their compound form. What we commonly term poisons, are so denominated in consequence of the popular conception of their effect upon the system, but in reality, they do

not essentially differ from medicaments. The very powerful operation which they produce when under due regulation, is, perhaps in every instance, capable of being converted to some salutary purpose, and is only noxious when carried to an excessive degree.*

Although the properties of chyme have been frequently examined, and various experiments performed upon it, still there is considerable obscurity respecting the nature of the process by which it is formed, and we are not able to account satisfactorily for the effect which is produced. The operation may be considered as analogous to the effect of a proper chemical action, when the body is not merely divided into the most minute parts, and has its aggregation completely destroyed, but at the same time acquires new chemical properties. That this kind of solution of the food takes place is proved by the experiments of Reaumur, Stevens, and Spallanzani. They inclosed different alimentary substances in balls, or in metallic spheres, or tubes that were perforated with holes, or in pieces of porous cloth; these were introduced

* Bostock, p. 563.

into the stomach, and after being suffered to remain there for a sufficient length of time were withdrawn, when it was found that the inclosed substances were more or less dissolved, while the substances containing them, whether metal or cloth, were not acted upon, thus proving that the effect was not of a mechanical, but entirely of a chemical nature.*

Among the most important points respecting the formation of chyme, which appear to be confirmed by the observations of Dr. Beaumont, are the following:—That the different kinds of aliment all require to undergo the same process by means of the gastric juice in order to be reduced into chyme; that the rapidity of the process differs considerably according to the delicacy of their natural texture, or the degree of their mechanical division; that animal substances are more easily converted into chyme than vegetable; that oily substances, although they contain a great quantity of nutriment, are comparatively difficult of digestion; and that the saliva is of no specific use in the conversion of aliment into chyme.

* Bostock, p. 566.

The opinion which is commonly entertained respecting the production of chyme, and the one which appears to be sanctioned by our experiments is, that the glands of the stomach secrete a fluid of a peculiar kind, which is named gastric juice, that this acts as a solvent for the food, and that the chyme is a solution of the alimentary matters in this juice.* It is, however, not a little remarkable, that when the gastric juice has been examined with relation to its chemical properties, nothing has been detected in it which appears adequate to the effect we observe to be produced. As far as we can judge, it nearly resembles saliva, or the ordinary secretion of mucous membranes, substances which indicate no active properties, and which we are disposed to regard as altogether very inert in respect to their action upon other bodies. From the experiments of Dr. Prout we learn, indeed, that a quantity of muriatic acid is present in the stomach during the process of digestion, but there does not appear to be any evidence of the existence of this acid before the introduction of the food into the stomach, so that we may

* Bostock, p. 568.

rather infer that it is in some way or other developed during the process of digestion, than that it is the efficient cause of it. After it is developed, we may indeed conclude that it essentially contributes to the completion of the process, although we are not able to explain the mode in which it operates.* Besides the property of dissolving the aliment and reducing it to the state of chyme, the gastric juice produces two other effects which are decidedly of a chemical nature, the coagulation of albuminous fluids, and the prevention of putrefaction.†

When the contents of the stomach enter the duodenum they are subjected to a new action, and undergo a further change in their constitution and physical properties, by which the chyme is converted into chyle. The nature and properties of chyle have been examined with more minuteness and accuracy than those of chyme, although with respect to the mode of its production, we are still less able to offer any satisfactory information. We seem to be in possession of little more than the general fact, that the contents of the stomach, soon after they pass into the duodenum, begin to separate into two

* Bostock, p. 569

† Idem, p. 570.

parts, a white substance, which constitutes the chyle, being detached from the mass, while that which consists of the residual matter is converted into fæces, and finally rejected from the system. At the same part of the intestinal canal where this separation takes place, the duodenum receives the secretion from the biliary and pancreatic ducts ; and it is stated that the chyle assumes its most perfect form, or is produced in the greatest quantity, about the orifices of these vessels, so as to indicate some connexion between the process of chylification, and the action of the bile and pancreatic juice. We have, however, no very direct proof of any action taking place between these fluids and the chyme, so as to convert it into chyle, nor are we able to offer any explanation of the nature of the effect which they might be supposed to produce upon it. The pancreatic juice appears to be in all respects similar to the saliva, and although the bile might be conceived to possess more active properties, in consequence of the resinous matter and the soda which it contains, we have no data by which we are able to ascertain what their operation would be upon the chyme. It has been supposed by some physiologists that the duodenum secretes a specific fluid, which converts chyme into chyle, as the gastric

juice converts aliment into chyme; but, as we have no proof of the presence of this fluid, except its supposed utility in the case under consideration, it would be incorrect to assume its existence, without more direct proof. We appear then to be reduced to the conclusion that the change is probably effected either by the intervention of the bile and pancreatic juice, or the action of the constituents of the chyme upon each other; both these causes may operate, although perhaps the former is the more efficient of the two.

The chyle, when thus procured from chyme, and separated from the residual mass, is a white opaque substance, considerably resembling cream in its aspect and physical properties. When removed from the body it soon begins to concrete, and finally separates into two parts,—a dense white coagulum, and a transparent colourless fluid, an operation which appears to be very analogous to the spontaneous separation of the blood into the crassamentum and the serum. The chemical properties of the constituents of chyle appear also to be considerably analogous to those of the corresponding parts of the blood, and the chyle is likewise found to resemble the blood in the

nature of its salts ; but on the other hand, it differs from it essentially in containing a quantity of oil or fatty matter, an ingredient which is only occasionally found in the blood. Hence it appears, that in its chemical properties, as well as in its physiological relations, we may regard the chyle as a kind of intermediate substance between the chyme and the blood.*

The principal object of Marcet's experiments was to compare the chyle as produced by vegetable and animal food in the same kind of animal ; for this purpose he procured it from the thoracic duct of dogs. The chyle consisted of a coagulum of a pinkish appearance, containing fibres or filaments, and of a fluid part very similar to the serum of blood, except that, in the animal chyle, there was the oily or fatty matter which floated on its surface, like cream. The vegetable chyle generally bore less resemblance to blood than that derived from animal food ; the latter was more disposed to become putrid, and upon the addition of potash, it evolved a quantity of ammonia, which was not the case with the vegetable chyle, while the oily matter was found in the animal chyle alone. The two species

* Bostock, p. 576.

were of the same specific gravity, and contained the same weight of saline matter, but the solid residuum of the animal chyle, as obtained by evaporation, was considerably greater than from the vegetable chyle. When they were both submitted to destructive distillation, the vegetable chyle produced three times as much carbon as the animal chyle, whence we may conclude that the latter contains a much greater proportion of hydrogen and nitrogen. It is not improbable that in this case the vegetable chyle was less completely assimilated, in consequence of the animal being fed upon a diet which was not natural to its digestive organs; for we observe the chyle of the horse, as examined by Vanquelin, which must have been derived from vegetable food, was in a more animalized state than the vegetable chyle in Marcet's experiments. Dr. Prout's results for the most part agree with those of Vanquelin and Marcet. The chyle was found to consist of a coagulum and a fluid part, which bore a general resemblance to the corresponding ingredients of the blood. In addition to these there was the oily or fatty matter, which appears, however, to have been in less quantity than in the animal chyle which was

examined by Marcet. Dr. Prout likewise compared the chyle as produced from vegetable and from animal food, and found the former to contain more water and less albuminous matter, while the fibrous part and the salts were nearly the same in both; they are both said to have exhibited a trace of the oily matter; upon the whole he found less difference between the two kinds of chyle than had been noticed by Marcet. Dr. Prout has given us an interesting account of the successive changes which the chyle experiences in its passage along the vessels, having examined it when it first enters the lacteals, when it has arrived nearly at their termination, and when it is finally deposited in the thoracic duct. Its resemblance to the blood, as might be expected, was found to be increased in each of these successive stages of its progress.*

Hunter observed, that in some cases of sudden death, the stomach itself was partially digested by the gastric juice which had been previously secreted. A fact of a similar kind is stated with regard to certain species of vermes, that are occasionally found in the stomachs of animals, and

* Bostock, p. 577.

which, as long as they remain alive, are not acted upon by the gastric juice, although after death it affects them as it does any other organized substance.

These facts are very curious and important, and they clearly prove that there is a difference in the mechanical and chemical relations of living and dead matter, a difference which we are not able to explain or account for. It is the same kind of difficulty which occurs with regard to the contractile and sensitive functions of the muscles and the nerves, that they are totally destroyed by the extinction of life, although for some time afterwards neither of these organs seem to have undergone any alteration either in their chemical or physical properties.* It may be conceived that the presence or absence of nervous influence is the cause of the difference which we observe between living and dead matter; that perhaps the electricity, which has been supposed to be identical with the nervous influence, may operate so as to prevent the chemical change which, under ordinary circumstances, tends to the decomposi-

* Bostock, p. 587.

tion of organized bodies, and may likewise prevent it from being acted upon by gastric juice. It is impossible to say that some effect of this kind may not take place ; but as we have no evidence of its existence, it would be premature to assume it as the basis of our hypotheses.

The development of carcinoma is the result of a diseased state of the vegetative process, which, whether general or local, in the first instance tends to involve the whole constitution.*

Vegetables appear to be endued with digestive organs, and to possess the power of digesting and assimilating those substances which are taken up by their absorbents and which are congenial to their nature, they are also capable not only of throwing off those substances which cannot be assimilated by them, but even such of their principles as may exist in excess. Thus oxygen is emitted both from land and aquatic plants, in very considerable quantities during the exposure to the actions of light ; and by this continual emission of vital air is the loss repaired which is occasioned by perspiration, combustion, fermentation, and putrefaction. Thus then it would appear, by the above remark, that

* Müller, p. 84.

as cancer is a diseased state of the vegetative process, and as that process possesses the power of digesting and assimilating those substances which are taken up by their absorbents, and which are congenial to their nature,—that when once formed cancer has the power of increasing in its growth by its own digesting and assimilating powers, and by these means it is continued until life ceases,—cannot we suggest some chemical agents to prevent the increase and growth of this diseased structure so detrimental to life, or some agent to prevent its appearing in the system?

The *oxygenated muriatic* acid, mixed in the proportion of half a cubic inch of acid and three cubic inches of water, made into a paste with the black-oxide of manganese, and seeds, produced the germination of *seeds*, which no effect before could cause to vegetate.* Thus then as it would appear that certain chemical preparations may cause the germination of seeds, might not certain chemical changes in the animal economy cause the first appearance of cancer, when the constitution has a predisposition to that disease? and may we not hereafter, as our chemical knowledge advan-

* Parkinson's Chemical Dictionary, p. 167.

ces, be enabled to discover by analysis what these changes are, and how they are to be chemically counteracted so as to remove them from the system generally ?

Carbonic acid, water, and *ammonia* are necessary for the existence of plants, and other substances are likewise requisite for the formation of certain organs destined for special functions peculiar to each family of plants. Plants obtain these substances from inorganic nature. In the ashes left after the incineration of plants the same substances are found, although in a changed condition.

Dry soluble *albumen* when placed in water, first swells up, and then forms a glairy fluid. This solution is coagulated by *heat*, by *acids*, by *alcohol*, by *creosote*, &c. The acids which do not coagulate *albumen* are *acetic acid*, *phosphoric*, and *pyrophosphoric acids*. The coagulated albumen dissolves with the aid of heat in strong *hydrochloric acid*, producing a purple solution. This reaction applies to all the modifications of *proteine*, and indicates a great similarity of constitution among them. The solution of albumen is also coagulated or precipitated by the ferrocyanide of potassium if acetic acid be added, by

acetate of lead, and the bichloride of mercury ; also by infusion of galls.*

The *urine* of carnivorous animals is acid, and contains alkaline bases united with uric, phosphoric, and sulphuric acids. We know perfectly the source of the two latter acids. *All the tissues*, with the exception of cellular tissue and membrane, contain *phosphoric acid* and *sulphur*, which latter element is converted into sulphuric acid by the oxygen of the arterial blood. In the various fluids of the body there are only traces of phosphates or sulphates, except in the urine, where both are found in abundance. It is plain that they are derived from the metamorphosed tissues ; they enter into the venous blood in the form of soluble salts, and are separated from it in its passages through the kidneys.†

Galvanism itself will produce coagulation of the albumen in the blood.‡

Animal tissues owe their softness to the watery fluids which they contain, and which fill their pores.§

The jelly-like matter contained in the cells of cancer preserves its transparency even if kept in

* Turner's Chemistry, p. 1186. † Liebig.

‡ Müller, p. 232. § Müller, p. 243.

alcohol; and if expressed from the cells and boiled it does not yield a trace of gelatine. After boiling for eighteen hours a portion of cancer alveolaris which had been macerated in alcohol, nothing was dissolved but a small portion of a substance somewhat allied to salivary matter, not precipitated by any re-agent, not even by tannin, and of the existence of which evaporation afforded the only evidence.* Thus then it would appear that, according to this statement, there is evidently a want of gelatine in cancer alveolaris: even if we gain no other knowledge, some importance may be attached to this fact, for it is the blood that forms the various animal tissues in a state of health; and therefore it may be presumed that this fluid may be deficient in some of its chemical qualities, and that a slow change takes place by the formation of a diseased structure, which, when once formed, gradually or rapidly progresses, according to the state of the blood. Whether nature endeavours to restore it to a healthy state by producing the chemical quality which is deficient, or allowing it still to preserve the same state, so as to favour the for-

* Müller on Cancer and Morbid Growths, p. 52.

mation of the disease, we remain in doubt. Without going into the chemical or physiological formation of blood, which would lead us to a lengthened detail, we may remark that it is obvious that as the blood is chiefly composed of compounds of proteine, its composition cannot be very different from that of proteine or its modifications. In fact, dried blood when analysed yields the same formula as proteine with an excess of hydrogen, and this excess of hydrogen is probably derived from the presence of fat.

From the blood, that is, from the compounds of proteine in the blood, are derived all the animal tissues. Some of these are compounds of proteine, others have no longer the characters of such compounds; but in all cases they are derived from proteine. Now let us look to the chemical analyses of gelatinous tissue. According to Scherer, the composition of gelatinous tissue is represented by the formula $C_{48} H_{41} N_{74}, O_{18}$, or doubled, $C_{96} H_{82} N_{15} O_{36}$, which latter formula represents 2 at proteine + 3 NH_3 + HO + O_7 . Although gelatine is thus nearly related to proteine, and is doubtless formed from one or other of its modifications, yet it has none of the characters of a compound of proteine. It

does not yield proteine when acted upon by potash, and it does not produce a purple colour with hydrochloric acid. It therefore no longer contains proteine. This accounts for the fact, that animals fed exclusively on gelatine die with the symptoms of starvation. The gelatine, containing no proteine, cannot yield albumen, fibrine, or caseine; and it has already been stated that the animal system, although it can convert one form of proteine into another, cannot form proteine from compounds which do not contain it. Blood, therefore, cannot be made from gelatine, and the animal soon dies. But when mixed with other food, especially compounds of proteine, gelatine may be useful and may serve directly to nourish the gelatinous tissues.* It would appear therefore that in cancerous disease there is a deficiency of gelatine and of proteine, from some cause or the other, and most probably from some deficiency in its formation in the animal tissues. The composition of many parts of the body yield the same or nearly the same formula as blood, which has already been stated $C_{48} H_{38} N_6 O_{15}$. Dried flesh when analysed gives the same, $C_{48} H_{39}$

* Liebig. Animal Chemistry, and Turner's Chemistry, p. 1194.

$N_6 O_{15}$. Arterial membrane.—The middle coat of the artery, which is a very elastic membrane, leaves when burned 1-7 per cent. of ashes—according to Scherer it is composed of $C_{48} H_{38} N_6 O_{16}$, that is, proteine + HO. Scherer has analysed numerous specimens of both kinds of horny matter, and deduced from his results the formula $C_{48} H_{39} N_7 O_{17}$; that is, proteine + $N H_3 + O_3$. Horny matter when acted upon by potash yields proteine on the addition of acetic acid. Feathers are closely allied to horny matter, but according to Scherer, contain 1 at. oxygen less; the formula of feathers, deduced from his analysis, being $C_{48} H_{39} N_7 O_{16}$.* I have given the formula here of several parts of the system to show that proteine is essentially necessary for the formation of the certain parts of the frame. Now in cancer the disease is very destructive, bone, muscle, and every part it affects become changed; and may not this arise from the want of proper nourishment, in fact to the want of proteine in the system, a want of its formation by the digestive organs, or by the system in general being unable to produce it by some chemical inability?† The

* Turner's Chemistry, p. 1194.

† Idem, p. 1195.

effect of proteine on the system was unknown, and as it contains the elements necessary for the formation of the blood and the other parts of the body, it is fair to give it a trial in the system, and to watch its effects not only in cancerous cases, but in some other affections where there is a general deficiency in the natural formation of any particular part ; for may it not depend upon a want of proteine in the system? Since these observations were written, this new chemical substance has been exhibited in several cases of cancerous affection ; and from my present experience I am inclined to doubt if any benefit has resulted from the exhibition of proteine in cancerous degenerations ; but, on the contrary, am induced to think that fresh symptoms unsatisfactory have resulted ; the tonic property of proteine has not resulted, as when proteine has been exhibited under other circumstances. In struma, even of very long standing, proteine will be found to be of the greatest benefit ; several cases of scrofulous affections of long standing have been successfully treated and some completely cured by a continuance of this new remedy, and its introduction must not be looked upon as the only benefit to the scientific treatment of

diseased structure, for it opens quite a new era in the practice of physic. Why should not the chemical defects found in disease be remedied by administering those compounds which may be deficient in the system? The subject is most highly interesting, and should be watched with a careful eye and close investigation.

When the breast is affected with scirrhus or even cancer in an ulcerated form, too much time ought not to be lost in the trial of remedies, however successful they may have been in other cases; for by endeavouring to cure the disease by medicine, we allow time for the malady to increase in size, or acquire that magnitude which renders its removal more serious and less successful than when the disease is small; in which case there is much less to remove, and nature heals the part much sooner; so that the imprudence of tampering with the disease cannot be too severely censured. It may be advanced that there is not that urgency for the removal of a swelling when it is in a simple or indolent state; but it must be remembered that there is danger of the disease rapidly advancing, and that when this stage has manifested itself in the system, the constitution suffers more and the

reparative process is in a measure impeded, or to a certain extent obstructed ; by which means the chances of the ultimate success of the removal of the tumour becomes diminished, and this increase is in the same ratio as the delay.

There are various opinions respecting the removal of carcinomatous tumours of the breast ; and a question has been raised whether carcinoma is a disease only to be palliated, or whether it admits of extirpation. Upon the best authority it has been stated that in ninety-nine cases out of a hundred the disease returns, either in the cicatrix or in the axillary or subclavian glands, even when removed under the most favourable circumstances, and when the operation has been performed at the earliest period at which the structural character of the disease has declared itself in the gland, no other part having been as yet invaded by it, and the whole of the diseased structure having been entirely removed ; this speaks against the operation being performed : but, on the other hand, it must be mentioned, that after the removal of a cancerous tumour the time of the return of the disease varies from six months to two, three, eight or ten years, and sometimes even to a longer interval ; and when the disease reappears, it fre-

quently does not return in such an active state, nor does the patient have the same formidable sufferings as in ordinary cases. Under such circumstances we must consider the removal of cancerous tumours as palliating the progress and rapidity of the disease, and prolonging the life of the sufferers a certain period beyond the time they might have lived had the disease been allowed to remain in the breast.

The life of animals is distinguished chemically from that of vegetables by the circumstance that in the former oxygen is constantly absorbed and replaced by carbonic acid; while in the latter carbonic acid is absorbed, its carbon retained, and its oxygen given out. Consciousness and the power of locomotion are peculiar to animals.

In animals two processes are constantly carried on; that of respiration, by which the animal heat is kept up, and that of nutrition, by which the matter consumed in the vital functions and expelled from the body is restored.

Respiration is essentially a combustion of carbon, which in combining with oxygen is converted into *carbonic acid*, and at the same time furnishes the animal heat. Liebig calculates

that the amount of carbon daily burned in the body of an adult man is about fourteen ounces, and that the heat given out is fully sufficient to keep up the temperature of the body, and to account for the evaporation of all gaseous matter and water expelled from the lungs.

This carbon is derived in the first place from the TISSUES of the *body*, which undergo a *constant waste*, but *ultimately* from the *food*.

In the carnivora, whose food is almost entirely composed of compounds of PROTEINE, albumen, &c., one part is devoted to supply the waste of the tissues, while another portion, or a corresponding amount of previously existing tissue, is decomposed, so as to yield the carbon required for respiration. As the tissues can only be decomposed by the exercise of the vital functions, this is the reason why, in the carnivora, an enormous amount of muscular motion is required to furnish the necessary supply of carbon.

On the other hand, the food of the herbivora contains but little of the compounds of *proteine*, only sufficient to restore the waste of the tissues; while the carbon required for respiration is supplied by the starch, gum, sugar, oil, &c., which form the great mass of their food, and no such

amount of muscular motion is required in them as in the *carnivora*.

It is in the form of bile chiefly that the carbon undergoes combustion. Hitherto, the true function of the bile has been disputed; and by most authors that fluid has been considered as an excretion, intended to be expelled from the body in the fæces. But Liebig has shown that only a small fraction of the whole amount of *bile* can be detected in any shape in the fæces, and that the bile unquestionably is reabsorbed in the intestinal canal and re-enters the circulation, where it soon disappears; and as the proportion of carbon in the bile is very large, although not sufficient to account for all the carbonic acid given out, there is no reason to doubt that it is gradually *consumed* by the *oxygen* of the *arterial blood*, and converted into *carbonic acid and water*, which escape by the LUNGS and SKIN.* Thus, then, the healthy functions must become changed by the existence of disease, and the bile may become chemically altered, so as to render it deficient in some quality subservient to life. Does the diseased structure supply carbon necessary for

* Turner's Chemistry, p. 1212, 7th edition.

respiration and the functions of the liver ? If so, would there be an increase or growth in the diseased part ? May not some chemical alteration in the bile be produced, and some chemical deficiency in the functions of the lungs exist during respiration, which must weaken the system and impair the constitutional powers generally, so as to encourage the growth of the disease. The bile of those patients who die of cancer should be chemically analyzed, and compared with that fluid in a healthy state, observing the chemical alteration : one experiment alone will not be satisfactory, several will be requisite. That the lungs and liver are frequently the seat of an advanced stage of cancerous affection cannot be denied ; and where the liver has become so diseased it would not be a fair trial to test the bile except with a view to enable the operator to discover some new compound, that might assist him in a future investigation on this subject. It is by small events that we may arrive at greater and more important ones, which may ultimately lead us to the way of relieving those who suffer under disease. That chlorine and its combinations, have an influence and a beneficial effect on certain cases of cancer there cannot be a

question in my mind ; and that carbon has also a decided influence over cancerous affections. Such remedies, like all medicines, have not the same action in every constitution, but more so in some particular cases than in others ; the cause may be hereafter made apparent. Some preparations of iron have an influence over this disease ; and it has been long known that blood contains a portion of iron. The ashes of hæmotosine contain iron ; but Liebig and Scherer have shown that the red colour does not depend on that metal, which may be removed either from the globules or from hæmotosine by strong sulphuric acid, without destroying the red colour ; and in this experiment the red matter left gives a white ash, free from iron. Iron, however, is essential to the blood, and is consequently supplied in the food. The ashes of almost all vegetables contain a little iron ; flesh of course does so, as it is mixed with blood ; and the yolk of egg is found to contain an oily matter of which iron is an ingredient.* It is possible in certain cases of cancer that the digestive functions have not the power

* Turner's Chemistry, 7th edition, p. 1191.

of conveying sufficient iron into the system to produce a healthy state of the tissues, and that this is one of the causes of the appearance of cancer. The exhibition of some of the preparations of that metal, by remedying the deficiency tends to disperse the disease. We own that this hypothesis may be weak, but not prove fallacious, and may be brought forward in respect to other remedies having an influence over the disease. We have looked in vain at the pathological appearance of the various stages of cancerous productions for some knowledge to enable us to use remedies with a degree of certainty ; we have also deeply studied the disease in various stages by the aid of the microscope with as little success. The blood has been examined in the same way, but little, very little variation has been observed. Chemical analysis of this fluid, and of the secretions may hereafter prove more successful. We are not easily daunted by difficulties that rise up and impede our researches, but shall continue our inspection on every opportunity. Time alone, which brings to light many hidden mysteries, may unravel some new view that may benefit science and promote our knowledge : should we even fail we have the

pleasing consolation of knowing that we are doing our duty to the best of our abilities, that we are endeavouring to clear a hidden subject, one that must benefit mankind and the public generally ; for can we see a sufferer labouring under the pangs of disease, without making some exertion to relieve the misery and prevent the progress of the malady ?

The peculiar state of the constitution adapted to produce cancer was well described by M. le Baron Boyer :—He said, “ On observe que les sujets d’une constitution *bilieuse* d’un caractère triste et mélancholique, chez lesquels la sensibilité et l’irritabilité, son très-développées, y sont plus exposés ; ces circonstances sont elles vraiment des prédispositions au cancer, ou bien doivent-elles être considérées seulement comme propres à favoriser l’action d’une cause intérieure capable de produire cette maladie et qui n’est point encore manifestée sous sa forme propre.”*

Among other means recommended, the application of intense cold has been suggested to destroy cancer by producing sloughing. The fol-

* Traité des Maladies Chirurgicales. Tom ii. p. 292.

lowing extract from the Edinburgh Journal,* will explain the plan proposed :—

Suggestions respecting the possibility of destroying cancer, by the application of intense cold, communicated to the Editor by a medical friend.

An expedient has suggested itself to my mind, by which I think that the application of artificial cold to a diseased part might be rendered very manageable: that is, by employing masses or plates of metal, cooled down to the requisite degree in a frigorific mixture, and then applied for a sufficient time to the part upon which it might be wished to induce mortification. I suppose that this effect would certainly be induced, by the application of heat after withdrawing the cold application.

Such metallic masses might be formed to any shape or size that might be wanted, and would have the advantage of limiting the application of the cold correctly to the surface intended.

The section of Van Swieten, which I mentioned to you to-day upon the subject of cancer, is 499. His speculation about curing the disease by inducing mortification, commences with the words—
“ Sed an non possit totus cancer emori?” or in the

* Vol. xvii. p. 311. 1821.

translation, "But is it not possible for a cancer to mortify?" and is continued to the end of that paragraph. The view he takes of the subject seems most sound and rational; and it appears to me that we possess an agent in artificial cold sufficiently powerful to execute his views. Having barely suggested the idea, I shall content myself with recommending it to your more mature deliberation.

It would seem to correspond correctly to what Van Swieten was in quest of; but in deep-seated diseases, when the preservation of skin by the knife so much contributes to the cure, it would seem to be less suitable. In more superficial affections, or in prominent tumours, especially those with circumscribed necks or bases, it may have fewer disadvantages.

It is by no means a rare occurrence for a cancerous tumour to slough and the part afterwards to heal; and this may be the effect of nature's all powerful aid, or result from the applications used. Several cases have been admitted into the Middlesex Hospital, within the last ten years, where sloughs have formed, the wound healed, and the patients been discharged cured. The application of cold to tumours of the breast cannot be safely

employed, as its use would endanger inflammation of the chest, either membranous or visceral, which might prove fatal to the patient.

Amongst other means recommended for the cure of cancer, compression has had its advocates many years since, and even at the present time. About thirty years ago, Mr. Young most strongly recommended its application, and brought forward numerous cases where it had been successful. The means that were used were compresses and bandages; and the pressure was carried to a very great extent. By permission of the weekly board, the plan was employed in the cancer ward at the Middlesex Hospital; and it has been mentioned to me by the late Mr. Jobèrns, that bandages and metallic plates were firmly attached around the chest, so as to produce pressure to a very considerable extent: the result was that the breathing became laborious, respiration impeded, and the patient soon sank exhausted. The application of pressure by means of an atmospheric pad placed in a wooden concavity and fixed over tumours of the breast, as recommended by Dr. Arnott, is highly ingenious and well merits a fair trial in some cases of tumour of the breast. But we cannot

conceive that such a plan can be successful in a case of cancer ; for it is not a mere local malady, but one connected with a disordered state of the system : and this fact has been generally admitted. Can then pressure made upon a particular part, cure a general or constitutional disease ? Absorption must take place, which will throw the disease into the system, and it will make its appearance in some other part. Chemistry may hereafter in its rapid progress, open some fresh ray of light upon cancerous disease, as well as upon other disordered states of the system, that will enable us to treat these complaints with more certainty, and in a more scientific and enlightened manner. Our knowledge now only enables us to know the effect of remedies, but not their chemical action. Liebig, who has enriched us with numerous observations, leads us deep into an investigation of new chemical compounds, which require our most serious thoughts and mature considerations, not only in diseased action, but also in the healthy functions of the animal frame. He states, “ By means of the circulation, oxygen is conveyed in the arterial blood to every part of the body. This *oxygen*, acting on the *tissues* destined to undergo *change*, produces a metamorphosis, by which

new soluble compounds are formed. The tissues thus destroyed are replaced by the new *matter derived from the food*; meantime, those of the products of the metamorphosis which contain the principal part of the *carbon* are separated from the venous blood in the liver, and yield the bile, while the nitrogen accumulates, and is separated from the arterial blood in the kidney in the form of *urea* or *uric acid*." Now supposing a cancerous disease to be once formed in any part,—without entering into the cause of its production,—does this disease undergo a change as well as the natural healthy tissue? that is to say, Does the oxygen in the arterial system acting on this diseased structure produce a change? And, if so, what new compounds are formed? Supposing new compounds be formed in the system, are they separated from the venous blood in the liver, and do they yield bile? and will these compounds be separated from the arterial blood in the kidneys and pass off with the urine? That a change takes place in cancerous affections there is but little doubt, and that when once formed there is generally a predisposition in the system to produce the disease in some other part, and frequently at a more distant spot, although,

sometimes in the immediate situation of the original malady: can this result from the metamorphosis of the disease and the formation of fresh compounds beneficial for its production? No doubt, when once formed, nourishment is kept up by some chemical compounds we are at present ignorant of, a want of a healthy vitality, and an encouragement of the development of fresh diseased structure. This may result from the want of some healthy tone in the brain or nervous power, or may be the effect of the state of the blood: so that these considerations lead us deep into the healthy as well as the unhealthy state of the solids and the fluids of the component parts of the frame. Further investigation, aided by chemical knowledge, will hereafter open a new view on this most important subject, and enable us to obtain a better insight into the changes that take place by the insidious character of this most formidable disease.

Amongst the various remedies that have been tried in the treatment of cancer, one of the most useful, both as an external application, and an internal remedy, is the chloride of zinc. Dr. Conguin, in Paris, employed this preparation made into a paste, with flour, one part to four

of flour, or one to three, or if he wished to make it stronger, one part of the chloride of zinc to two of flour. This paste he termed the "phagedænic paste." The mode of applying it is to soften it with water, to spread it over any ulcerated surface, or to employ this paste with a camels' hair brush, and afterwards apply a poultice. Dr. Bureaud Riofrey published a work on the use of this remedy; and he names the paste "escharotic," a far better term, as it bespeaks its action. After this application, a slough takes place, and an healthy action is set up in the ulcer. I have very frequently healed a large ulcerated surface by its use, not only on one occasion but several times at different periods upon the same patient. There are several cases published, where this application has been of the greatest service; but one of the most remarkable that I have seen is that of Ann Scammel, where this remedy was administered internally. In large irregular cancerous ulcers, a lotion may be made of the chloride of zinc and water, and applied by means of a syringe against the ulcer once or twice a day. The advantage of using it in this form is, that it gets into every small interstice; and it may be employed when the paste cannot

be applied on account of the ulcer being excavated or too ragged. But this remedy, like many of the preparations that have been recommended, is only of use in arresting the progress of this formidable disease: we are flattered by vain anticipations of curing the disorder, buoyed up with hope which is fallacious and disappointing, whilst the cancerous disease continues slowly in its progress, daily gaining an ascendancy upon the constitution, until death alone checks its malignant propensity.

M. Fauchon recommends -- among other means to supersede the necessity of operation, or the employment of caustic, in cases of cancer—compression, and the continued application over the part affected of a muslin bag, containing a powder composed of one part of iodide of potassium, two parts of chloride of sodium, two of burnt sponge, in powder, and eight of muriate of ammonia; or, at other times, the use of an absorbent powder, consisting of nitrate of potass and Florentine orris-root, one part of each, and powdered burnt sponge twenty parts. Thirty individuals treated by the above remedies are said to have experienced such marked benefit as to

require no operation ultimately for the excision of the diseased organ. In some, though not in many cases, the mammary glands are stated to have become wholly absorbed, as an effect of the application.*

The editor of an American paper has published a case of open cancer, in which the topical application of the leaves of the poke-weed not only allayed the pain, but produced a complete sloughing of the diseased part, and rapidly healed the ulcer that remained after the separation. The patient, a female of colour, by accident covered the cancerous part with the leaves of the plant, for the purpose of keeping the flies from it. Finding unexpected relief from it, she continued to renew the application till the morbid structure was separated, and the ulcerated part healed. The most important discoveries having arisen from circumstances equally accidental, we have thought proper to notice the fact. An experienced surgeon of London informs us, that he has succeeded in curing a cancerous ulceration of some standing, which had resisted a variety of applications, by dressing it

* *Lancet*, No. 14, Dec. 31, 1842, p. 310.

daily with a powder composed of equal parts of the oxyphosphate of iron, and the leaves of hemlock finely pulverized. In the course of a week the whole surface with the callous reflected edges sloughed, and were succeeded by a healthy granulated surface, which rapidly healed.*

Dr. Sweindeur, a German physician of considerable eminence, informs us that he has found the following composition, thinly sprinkled over, or applied by means of a camel-hair brush to the surface of cancerous and foul spreading ulcers every other day, to occasion a complete separation of the diseased parts, and to leave a healthy granulated surface, which heals rapidly with simple dressing.

Take of prussiate of iron, (hydrocyanate) finely powdered, half an ounce, fresh hemlock-leaves, finely powdered, two drachms; to be well mixed together.

In some cases he has found it necessary to apply to the surface a weak ointment of acetated copper. After the application of the powder, he covered the part and the inflamed skin surrounding it with a poultice composed of fine

* Gazette of Health, vol. 8, p. 725, Nov. 1823.

oatmeal, six parts, linseed powder, two parts, finely powdered charcoal, one part, yeast, one part, and a sufficient quantity of water to form a poultice. He attended to the general health, prescribing Peruvian bark, sulphuric acid, and carbonate of iron, when the disease was attended with indigestion and general lassitude. When attended with fever, the saline mixture in a state of effervescence, to the extent of a quart, daily, or in sufficient quantity to act on the bowels was employed.

For the beneficial effect of the topical application of iron in cases of cancerous and foul-spreading ulceration, the Doctor states he is indebted to Mr. Carmichael, an eminent surgeon of Dublin. He has been induced to employ the prussiate of iron, &c., in preference to the phosphate and oxyphosphate of iron, recommended by Mr. Carmichael, because the composition excites neither pain nor inflammation in the surrounding healthy parts.*

We lately met with a case of true scirrhus of the mammary gland, of many months' standing, which was completely dispersed in the course of four months, by frequently washing the breast every night and morning with a

* Gazette of Health, vol. 6. p. 1022, August, 1821.

saturated filtered solution of extract of deadly nightshade in proof spirit; by applying over the tumour a plaster of the extract of deadly nightshade spread on leather; and by the internal exhibition of the following solution, in the dose of twenty-five drops twice a day, in a quarter of a pint of marshmallow-root: Take of tincture of iodine, one ounce, oxymuriate of mercury, three grains: mix. Three aperient pills (composed of extract of jalap and extract of rhubarb) were administered twice a week. The patient avoided acids and spirituous and vinous liquors, and lived chiefly on vegetable jellies: a small proportion of meat (underdone) was allowed only once a day. The addition of the oxymuriate of mercury in the small proportion specified above considerably promotes the effect of iodine in cases of scrofula, leprous affections of the skin, and indolent tumours.*

The ulcerated stage of scirrhus breast, commonly termed "open cancer," is much soothed and often permanently relieved by covering the sore with lint wetted in a solution of nitrate of silver, in the proportion of one scru-

* Gazette of Health, No. 89, p. 524.

ple of that substance to two ounces of water, and laying over the whole breast a linen cloth moistened in a liquid consisting of two drachms of crude opium and an equal quantity of muriate of ammonia dissolved in a pint of water. This liquid should be applied cold, and renewed every three or four hours.

Three grains of the extract of cicuta, with two grains of blue-pill, may be given every night and morning, and the bowels may be regulated by the occasional use of from two to four drachms of sulphate of magnesia. In these cases it is most desirable to arrest the prevailing ulcerative decomposition, by subduing as much as possible the peculiarly distempered state of sensibility as well as irritability that occasions it, and which induces the gnawing torture inseparably attending that destructive process. If a truce can be gained with this most afflictive malady, it might possibly proceed to radical and lasting amendment.*

Mr. Hill of Chester published a case of malignant cancer, in which the internal use of the tincture of iodine and topical dressings of

* Gazette of Health, No. 152, p. 244.

the ointment of the hydriodate of potass produced very beneficial effect. The patient, a widow, was sixty-two years of age; and having led a laborious life and had ten children, her constitution was much shattered when Mr. Hill's advice was solicited. The breast presented a large hollow fetid ulcer, with ragged, thickened, hard edges: the ribs were in some places bare, but the periosteum was complete. Having put every topical and constitutional treatment of which he had any knowledge fairly to the test, Mr. Hill determined to give iodine a trial. He commenced with an ointment made of half a drachm of the hydriodate of potass, to one ounce of fresh lard. This application applied twice a day gave no pain, the patient always observing, "it felt comfortable." In a few days the quantity of discharge was clearly less, and the quality improved; the surface of the ulcer exhibited a more favourable aspect; the ill-coloured tubercles softened and gradually sloughed away. In six weeks, the diseased part indicated most encouraging appearances, having nearly lost all its peculiar cancerous character. Soon after commencing the use of the ointment, the tincture of iron was admin-

istered, to the extent of thirty drops twice a day. Under the combined influence of these remedies, the acute shooting pains soon ceased, so that she was able to relinquish the use of laudanum, which she had for many months found necessary to procure sleep. After pursuing this plan for four months, the lower portion of the ulcer was completely healed; and the healing process continuing, in another month a dressing of the size of a sixpence covered the surface of the ulcer. Mr. Hill now flattered himself with the prospect of a complete cure; but after a few weeks, notwithstanding the ointment and the internal treatment, the ulceration extended, and ultimately terminated life.

The effect produced by the local application, as well as the exhibition of the chloride of zinc in cancer, was observed to be beneficial in many instances in healing ulcerated surfaces, not only once but three or four times, by the successive application of this preparation, combined with flour applied in the form of paste. The effect produced by the internal administration of one-third or half a grain of this preparation in water, even once a day, changed the character of the

cancer, from a diffused form, which extended over a large surface, to a mere circumscribed extent, and the character of the disease being then of a tuberculated appearance, which may be accounted for by the removal or absorption of albumen or serum in the surrounding cellular tissue. This preparation affected the gums in the same way as preparations of mercury ; and in one case this medicine was obliged to be discontinued for this reason. It became an object then to ascertain whether the effect produced resulted from the exhibition of the chlorine, or the metal, or the combination of the two. To arrive, therefore, at some conclusion on the subject, the following combinations of chlorine with other preparations were exhibited in several cases, and the result carefully watched ; thus the chloride of potassium, chloride of lead, the chloride of carbon, were applied and administered to different cases ; and the interesting results and effects of these remedies will be found in cases given in this work.

A plaster made with the following ingredients has been found serviceable in many tumours of the breast : Mercurial ointment, one ounce ; gum ammoniacum, six drachms ; extract of deadly

nightshade, four drachms; prussic acid, one drachm: reduce the gum to a fine powder, and with the extract and a little water form a thick mass, and then add the ointment previously mixed with the acid, and unite them by means of a pestle and mortar. This composition is to be thickly spread upon leather, and a piece cut to the size of the tumour and applied carefully over it.

Chloride of calcium is hard, semitranslucent, and fibrous, excessively deliquescent in the air, fusible at a red heat, and incapable of being sublimed or decomposed by any known elevation of temperature. It is exceedingly soluble in water, and also in rectified spirit; in which states it becomes identical with the crystallized salt. In consequence of its strong affinity for water, it reduces a confined space of air to a state of very perfect dryness; and thus indirectly removes water from many hydrated substances if enclosed along with it.* Solutions of chloride of calcium with water will be found very useful in many foul, ulcerated, cancerous affections, particularly when the fœtor is excessive.

Chloride of carbon.—The chloride of car-

* Christison's Dispensatory, p. 232.

bon may be most easily obtained by the action of alcohol on the chloride of oxide of calcium : when these are mingled together in the proportion of three or four parts of the former to one of the latter, the chloride is disengaged, and may be collected in a cooled receiver.

The knowledge that carbon had a most powerful tendency in preventing the decay of animal matter, and also in a great measure in removing putrescency when commenced, together with numerous opportunities of observing the effects of the various combinations of chlorine in cancerous affections, led to the introduction of the chloride of carbon as a medicinal agent ; at the same time I was desirous to see the effect of the perchloride of carbon. But the chloride was furnished to the hospital by Mr. Garden of Oxford-street ; and at present the perchloride has not been used.

Chloride of carbon is a thick ætherial oily fluid, dissolving slowly in water. When dropped into a glass of that liquid, it may be observed to descend gradually, floating about like some spirits. It has a strong odour of chlorine, not an unpleasant taste diluted with water, and removes the fætor when applied to ulcerated surfaces.

The first trial of this preparation, which I intro-

duced as a medicine was as a local application to a cancer of the breast, and its effect was of a sedative character. The patient was relieved from a great deal of the pain which she had previously suffered from. It was then given internally, one drop in water at night. It produced sleep, and gave perfect ease. The dose was increased to two and then to three drops ; and the patient, after taking a dose of three drops, slept for twenty-eight hours: when she awoke, she appeared and said she felt as if she had been intoxicated. In this case the remedy produced sloughing of the diseased structure. In very many cases that have come under my treatment, this remedy has produced perfect freedom from pain, quieted the mind and nervous system generally, prevented the rapid growth and progress of the disease: and has rendered the patient's life comparatively happy to their previous feeling and condition. In some cases it has little or no effect ; in a few instances affecting the head, and making the symptoms more aggravated. When sleep is not produced by one or two drops of this preparation, a very small dose of the solution of acetate of morphine will produce immediate effect in such cases where it is likely to be serviceable. Acids will also produce the

same result. In cases of uterine irritation or neuralgic affections of that organ, it has proved most highly beneficial, not only in allaying the pain, but by producing a perfect cure. In such cases its exhibition has been internally; but in others attended with obstinate discharge, it should be used as an injection as well as being prescribed internally. In violent sickness, when all the usual and most approved remedies have failed to allay the vomiting, three drops of this preparation has at once taken effect; I have in such cases found benefit from applying it locally to the pit of the stomach. In cancer of the pylorus it has proved most efficacious in preventing the return of the food, and in relieving the pain and sufferings of the patient. In sloughing ulcers I have used it extensively, and I am not acquainted with a remedy more beneficial. In phagedæna there cannot be a more useful local application; but care should be taken to apply it only to the sloughing parts. The usual strength as a local application is a drachm of the chloride of carbon to a pint of water; either as a lotion or an injection, it has been frequently prescribed with poppy decoction, and extract of conium, and as an injection in this form

its effect has been very successful. The dose internally is from one to four or five drops ; but in cases of malignant diseases, one to two or three drops will be quite sufficient to produce sleep, if it is likely to produce this effect. Like all remedies, it does not act upon every constitution alike ; but if any person doubts its effects, the better way would be to take a dose of three drops and watch the result : it is a safe remedy. In cases where it has been continued for a length of time (several months) it has been observed to produce a state of debility in the system which can be remediated by the exhibition of the ammoniated tincture of bark, or sesquicarbonate of ammonia. The preparations of steel will also be useful under such circumstances. In fungoid disease, the application of the chloride of carbon has been very remarkable : it was applied to a diseased structure extending from the mastoid process to near the centre of the clavicle : the whole of the tumour sloughed and the part healed. It was afterwards applied to a diseased structure below the outer part of the knee-joint : this tumour sloughed, the swelling was about the size of an orange, and the slough came away from an orifice in the skin the size of a shilling, and this also healed. It was then ap-

plied to a tumour in the groin, which also sloughed and healed. Its application was then employed to a swelling over the shoulder; but at this period, the disease made rapid progress over the abdomen, and the patient died. Had she lived, no doubt it might have had the same effect upon the last swelling; when she was admitted into the hospital these tumours were all formed. Since this period I have used this application to a fungoid tumour of the breast. It produced a slough, and the wound afterwards healed; at present the patient has had no return of the disease. I am induced to believe it may prove beneficial in this class of disease.

Chloride of carbon mixed with water forms a very useful gargle in foul ulcerated sore throats, removing the fetor and giving the ulcers a healthy appearance. It is also of the greatest use in affections of the gums and teeth, removing the unpleasant stinging pains produced by the exposure of some nervous filament; and its use not only gives ease, but removes any unpleasant fetor from the breath. It may be used with a common tooth brush, instead of any other application to the teeth. In neuralgic affections it has given the greatest ease, by being employed in the form of

a liniment, composed of soap liniment, two ounces, to one drachm of chloride of carbon, or with camphorated oil. This liniment should be carefully rubbed over the part affected

Carbon and Chloride.—Mr. Faraday has ascertained that by exposing carburetted hydrogen, mixed with great excess of chlorine, to the action of light, a white crystalline substance is formed, which when purified by washing with water, is a perchloride of carbon. It is formed as follows: a glass vessel capable of holding about two hundred cubic inches, is properly mounted, with a stop-cock, and exhausted upon the air-pump: it is then nearly filled with chlorine, and afterwards placed in connexion with a jar of olefiant gas standing over water; and as much as can enter, having passed in, the cocks are shut and the whole left for a short time. When the fluid compound of chlorine and carburetted hydrogen has formed, the cocks are re-opened, and a fresh portion of carburetted hydrogen rushes in, in consequence of the condensation which has taken place. This is left, as before, to combine with the remaining chlorine, and the process continued until no further action ensues, and the vessel is, in fact, full of carburetted hydrogen;

chlorine is then similarly admitted, in repeated portions, and, ultimately, a quantity of the liquid hydrochloride of carbon is obtained, with an atmosphere of chlorine above it: in this state it is exposed to the direct rays of the sun. The chlorine speedily disappears, and muriatic acid is formed: this is absorbed by the admission of a little water; another atmosphere of chlorine is then admitted, and exposure to the sun repeated; by continuing these operations, crystals are at length formed in the liquid; these are to be collected, washed, and pressed between bibulous papers, then introduced into a glass tube, and sublimed by a spirit-lamp;—the pure substance, with water, will rise at first, but the last portions will be partially decomposed, muriatic acid will be liberated, and charcoal left. The sublimed portion is then to be dissolved in alcohol, and poured into a weak solution of potassa, by which the substance is thrown down, and the muriatic acid neutralized and separated; then wash the substance with repeated affusions of water, collect and dry it, first between folds of paper, and then in the exhausted receiver of the air-pump. If quite pure, it sublimes without any change; and a small portion dissolved in

ether gives no precipitate with nitrate of silver.

Perchloride of carbon thus purified is nearly tasteless; its odour resembles camphor; its specific gravity is about 2; it is a non-conductor of electricity, and powerfully refracts light. It is volatile, and in close vessels fuses at 320° ; it boils at 360° , and may be distilled without decomposition: its vapour again condenses in crystals as it cools. It is not very combustible, but burns when held in the flame of a spirit-lamp, with the emission of much smoke and acid fumes. It burns vividly in oxygen gas. It is insoluble in water, but readily soluble in alcohol and ether; these solutions deposit arborescent and quadrangular crystals. It also dissolves in volatile and fixed oils. It is scarcely acted upon by alkaline and acid solutions; but most of the metals decompose this substance at a red heat. Potassium burns brilliantly in its vapour, causing the deposition of carbon, and the production of chloride of potassium. The metallic oxides also decompose it at high temperatures, producing metallic chlorides, and carbonic acid or oxide, according to the proportion of oxygen present; no water is produced, showing the

absence of hydrogen in the compound. It appears from various analytical experiments upon this compound, among which may be mentioned its decomposition, by passing it through red-hot peroxide of copper, that 100 parts afford 10 carbon + 90 chlorine ; whence it would appear to consist of

$$\begin{array}{rcl}
 2 \text{ proportionals} & . & 6 \times 2 = 12 \\
 3 \quad , \quad \text{chlorine} & & 36 \times 3 = 108 \\
 & & \hline
 & & 120 *
 \end{array}$$

It has already been stated, that at present the perchloride of carbon has not been used in medicines ; at least, we are not aware of it having been exhibited ; and since the above has been printed, an article on the fluid now in use has been published in the Pharmaceutical Journal, which I take the liberty of giving, as I am anxious that my readers should be aware of every particular respecting this and other preparations.

Historical notice of the Chloride of Formyle, commonly called Chloric Ether, or Terchloride of Carbon. By Dr. PEREIRA, F.R.S.

The term *chloric ether* was applied by Dr. T. Thomson (*System of Chemistry*, 6th edit., 1820)

* Brand's Chemistry, Vol. 1. 3rd Edition, p. 314.

† March, 1846, p. 412.

to the liquid formed by the union of equal volumes of chlorine and olefiant gas, and which is described in different chemical works under the name of *chloride of olefiant gas*, or the *Dutch liquid*. The formula of this liquid is $C_4 H_4 Cl_2$.

In 1831, Mr. Guthrie, an American Chemist, was led to attempt a cheap and easy process for preparing it, by a statement in Silliman's *Elements of Chemistry*, that the alcoholic solution of chloric ether was a grateful and diffusible stimulant. His process, (which was published in Silliman's *American Journal of Science and Art*, vol. xxi., p. 64, January, 1832) was as follows :—

“ Into a clean copper still, put three pounds of chloride of lime and two gallons of well-flavoured alcohol, of sp. gr. 0.844, and distil. Watch the process, and when the product ceases to come over highly sweet and aromatic, remove and cork it up closely in glass vessels. The remainder of the spirit should be distilled off for a new operation. These proportions are not essential—if more chloride of lime be used, the ethereal product will be increased; nor is it necessary that the proof of the spirit should be very high; but I have commonly used the above proportions and proof, and have every reason to

be satisfied with them. From the above quantity I have usually obtained about one gallon of ethereal spirit."

Both Guthrie and Silliman erroneously believed the liquid thus obtained to be an alcoholic solution of the chloride of olefiant gas, and hence they termed it *chloric ether*.

In 1831, Soubeiran (*Ann. de Chim. et de Physique*, t. xlviii. p. 131) submitted to distillation a mixture of chloride of lime and alcohol, and examined the distilled product. He found it to consist of

Carbon	14.39
Hydrogen	2.35
Chlorine	83.26
		<hr/>
		100.00

The atomic composition which he gave for this liquid was, when reduced to the English mode of calculation, C H Cl ; or $\text{C}_4 \text{H}_4 \text{Cl}_4$. He termed the liquid *bichloric ether*, because it contains, as he says, twice as much chlorine as it contained in the chloride of olefiant gas.

In 1832, Liebig (*Ann. de Chim. et de Phys.* xlix., p. 146) examined the product obtained by submitting to distillation, in a capacious retort,

diluted alcohol and chloride of lime. He analyzed the distilled product, but failed to detect hydrogen in it. According to his experiments, the compound consisted of

Carbon	12.6523
Chlorine	88.18
	<hr/>
	100.8323

The formula which he deduced from this analysis was $C_4 Cl_5$, and he called the liquid *chloride of carbon*.

In 1834, Dumas (*Ann. de Chim. et de Phys.* t. vi., p. 113, 1834) examined this liquid. He showed that Soubeiran had not obtained it pure, and that Liebig had made an error with regard to its composition. From his analysis of the pure liquid he deduced the following as its real formula: $C_2 H Cl_3$.

On account of the relation of its composition to that of formic acid, ($C_2 H O_3$), Dumas denominated this liquid *chloroforme*.

Liebig has admitted the accuracy of Dumas's analysis by adopting his formula of the composition of this liquid. He has, however, discarded Dumas's name for this substance, and adopted that of the *chloride* or *perchloride of formule* (*formylchlorid*.)

Thus, then, it appears that the liquid now used in medicine under the names of *chloric ether*, and *terchloride of carbon*, is altogether different from the chloride of olefiant gas, to which the name of chloric ether was originally applied. Both of these names (chloric ether and terchloride of carbon) have been given to it from erroneous notions entertained of its nature and composition.

Tincture of Indian hemp.—A lotion formed with one or two drachms of the tincture of Indian hemp to half-a-pint of water may be applied to cancerous affections, and be productive of beneficial results, allaying pain, and in some cases preventing the progress of the disease continuing so rapidly. It has been given internally on several occasions, and produced perfect ease, particularly from the lancinating pain so frequently felt by those suffering from these complaints; but upon other occasions it has produced the most severe pain in the head, so that the patients have been unable to take the dose a second time.

The Heuchera-root (alum-root)—has been recommended in cancerous sores; and some practitioners entertain a very high opinion of its

beneficial effects. In some few cases that have come under my notice, I have observed a favourable change take place in cancerous ulcers by its local application, for a short period; but it soon ceases to have the same effect. In some cases, when the cancer bleeds, it may be very advantageously applied, as it frequently prevents hæmorrhage.

Perchloride of Copper may be formed by dissolving peroxide of copper in muriatic acid, and evaporating to dryness by a heat below 400° . It is soluble in water, producing a permuriate, from which potassa precipitates the peroxide; its colour is yellow, but it becomes white and afterwards green, when exposed to heat and moisture. Exposed to a red heat in a tube with a small orifice, gaseous chlorine is expelled, and it becomes a protochloride. It readily absorbs ammonia, and becomes a blue pulverulent mass. It consists of

1	proportional of Copper	. . .	=	64
2	„ Chlorine (362)	.	=	72

Equivalent of perchloride of Copper. = 136*

* Brand's Chemistry, vol. 2, p. 62.

The perchloride of copper I have used on many occasions to cancerous ulcerated sores, in the form of a lotion, made of the strength of six grains to one ounce of water : it would appear by the account above, that it becomes a permuriate. On many occasions its application has been very beneficial, by reducing the ulcerated surface, when above the skin, and causing it to heal. In one case, the ulcerated surface was again formed, when the application had the same effect ; and at present, the disease has not returned. It was used to several excavated ulcerous surfaces, on the under lip and chin of a patient, under my care, in Stafford's wards : the ulcers all healed, and the man went home into the country. Four months afterwards he returned with the disease as bad as when he was first admitted ; the application was again employed, and he was ordered 10 grains of proteine twice a day : the disease was cured ; and up to this time he is quite well, with the exception of a little hardness on the left side of the under lip. This preparation may be used either as a lotion or an injection ; it will prove highly useful in irregular ulcerations of the os uteri, and may be combined with some sedative application, should its use cause much pain.

I consider it likely to be very beneficial under certain circumstances.

Chloride of Potassium.—I have administered this preparation internally, in doses of from three to six grains, twice and three times a-day: the patients have been unable to continue it on account of it causing uneasiness and troublesome sensations in the head. I have also employed it locally, but with no success in cancerous affections. In cases of secondary eruption it forms one of the best lotions that can be prescribed. Four grains to one ounce of water, is the usual strength that I have recommended it.

Chloride of Lead.—This compound, sometimes called *horn lead*, is slowly formed by the action of chlorine gas, on thin plates of lead, and may be obtained more easily by adding hydrochloric acid or a solution of sea-salt to acetate or nitrate of oxide of lead dissolved in water. This chloride dissolves to a considerable extent in hot water, especially when acidulated with hydrochloric acid, and separates on cooling in small acicular anhydrous crystals of a white colour. It fuses at a temperature below redness, and forms as it cools a semi-transparent mass, which has a density of 5.133. It bears a full red heat in close

vessels without subliming ; but in open vessels it smokes from spurious evaporation, loses some of its chlorine, and absorbs oxygen, yielding an oxychloride of a yellow colour.*

I have employed the chloride of lead both in the form of a lotion and an ointment with some success. As a lotion it is of use in producing a healthy surface upon a cancerous sore, in removing the fetor, and relieving the pain ; and when the ulcer has not been extensive, it has been healed under its application. In painful neuralgic tumours it has proved very beneficial in relieving the pain, and when applied to any great extent by rubbing it over the part in the form of an ointment, it has produced a numbness in the arm ; and from the observations that I have made by watching the effect of this application, I am induced to think that the pain is removed by paralysing the nerves of the adjacent parts ; so that when a tumour involves a nerve in its texture, and the pain from this cause becomes very severe, its application may be serviceable in producing easiness ; but should an operation be contemplated, it ought not to be performed until the effect of this appli-

* Turner's Chemistry, p. 524.

cation has completely subsided, or otherwise the wound may not heal so readily as might be expected. From what I have seen of the effect of this remedy I am inclined to believe that, combined with other applications and assisted by internal treatment, it may be of very considerable service in certain cancerous affections.

Chloride of Gold.—This preparation has been exhibited internally in several cancerous affections, without producing any beneficial result, either upon the constitution or the cancerous structure, and from the observations that I have at present made, I am inclined to think that it will not ultimately prove serviceable. In many cases of secondary symptoms its effects have been very useful, and its exhibition has been of service after taking only a few doses. The tenth or twelfth part of a grain has been prescribed in the form of a pill, once or twice a day. The patient should be carefully watched during the period of taking this medicine, as it affects the head and also the stomach, producing inflammation, which in two cases extended to the structure of the lungs.

Chloride of Platinum.—This preparation has been administered internally as well as employed

externally, and from what I was led to believe from its effects, upon scirrhus tumours as stated to me by a medical gentleman I met in consultation, I fully expected some most striking results, but have been disappointed on every occasion when it has been prescribed; but still it is my intention carefully to watch its effects on some future opportunity. At this time I must own I have little faith in its use, either as a local application, or as an internal remedy.

Fucus Helminthocorton, Corsican Sea-Moss.—

For the cure of scirrhus or occult cancer, Mr. Farr relied on the Corsican sea-moss, the most eligible way of exhibiting which, he said, was either in the form of infusion or decoction, in the proportion of half-an-ounce of the moss to a pint of boiling water. After standing ten or twelve hours, the liquor is to be strained off for use and kept closely corked in a cool place. The dose of the infusion is a wine-glass three times a day, *i. e.* an hour and a half before each meal. More than a pint should not be made at one time, as it soon undergoes a change. It may be given of this strength at the commencement, even to persons of the most delicate constitutions, without producing any peculiar

symptoms; but about the sixth or seventh day an increase of urine may be looked for, a slight perspiration also will be perceived; and if no other effects are produced by the eighth day, the quantity may be augmented to three-fourths of an ounce to a pint of water; and in tolerably strong constitutions, four wine-glasses full may be taken in the course of the day: should this fail to produce an increased evacuation, the dose should be increased in the same proportion:—

Case of scirrhus successfully treated by the Fucus Helminthocorton, by H. Sully, M.D. Surgeon to H.R.H. the Duke of Cumberland, and to the Wiveliscombe Infirmary.

MARTHA LOLLAR, aged 45, was admitted a patient into the Wiveliscombe Infirmary, stating the following particulars:—

About eight years ago she received a blow on her breast, occasioning considerable inflammation, pain, and tumefaction, which advanced to suppuration: and after healing, the surrounding parts remained discoloured and indurated from a condensation of cellular structure. In about four years the discoloration abated, but the

induration remained until the period of her admission. On the 12th of October, 1823, she was admitted, and had then a considerable tumour in the breast, indurated, irregular, and painful. Having on that day the advantage of a consultation with Mr. Ling and Mr. Mills, two eminent surgeons of the neighbourhood, who were on a visit to me, I proposed, instead of advising a removal of the diseased breast, to try the effect of the Corsican sea-moss, (*fucus helminthocorton*,) which was immediately had recourse to in form as below stated. In the space of two months the tumour was distinctly acted upon by the medicine, and was divided into three separate lobules, which were deprived of their irregularity of surface. All kind of pain had completely subsided, and, in the space of two months more, these divided tumours were become as soft as any part of the breast, and were finally absorbed so as to leave behind no vestige of the tumour.

Fucus helminthocorton, one oz.; *Aq. bullientis* sixteen ozs.; *Stent. hor.* xxiv. *loco callido et cola*; *sumat cochl.* iv. *ter die*.

It sometimes so occurs in the exhibition of the Corsican moss, that the quantity of four spoonfuls disagrees with the stomach, in which

case a spoonful or so may be omitted. The first obvious effect of this medicine is to produce green specks on the alvine secretion, which generally appear in a week or ten days. Should the bowels require any aperient, the best is about thirty grains of rhubarb, and thirty of sulphate of potass, in a little water. In this case no external application was made use of, but the breast was kept moderately but not unusually warm. Many other cases have received equal benefit from this valuable medicine, which can be procured from the Medical-hall in Piccadilly, in the greatest perfection. There are other cases which promised fairly to receive beneficial effects where none were produced ; but these are very few in number compared with those which received assistance.*—Wiveliscombe, Somerset, May 3rd, 1827.

Goosegrass.—*Galium aparine*, class, *Tetrandria*, order, *Monogynia*. This remedy has been used in several cases, and sometimes with a beneficial result. A lady prevented the progress of a cancerous tumour of the breast, by applying a poultice made of goosegrass twice a day, at

* Lancet, Vol. xii. 1826-7, p. 237.

the same time taking a wine-glass of the fluid obtained from the goosegrass three times a day : this was continued for a period of twelve years.

Bleeding Cancers and Acrid Humours.

Copy of a letter from the Rev. Dr. Bateman to the Rev. Mr. Reynolds, describing some extraordinary cures by the use of Clivers, otherwise, Goosegrass.

SIR, Sept. 1st, 1783.

AN old woman in my parish who had what they call a "bleeding cancer," continuing to eat away the flesh for several years, had a relation at Abingdon, to which place she went for the help of a surgeon, who called on her frequently, without any good effect; and at last she was sent home with the comfortable assurance that she would be relieved from her misery in a fortnight or less. On her return to my parish I was sent for to pray with her. Never did I meet with such an object in the whole course of my life: nothing could be so offensive as the smell, nothing so terrible as her shrieks. Just at that time I was desired to write to Dr. Delanies, Professor of Botany, and to acquaint myself with some botanic expressions. He re-

ferred me to some books in our library in Magdalen College; and after I had finished my complement, I amused myself with reading the virtues of several plants I was acquainted with, particularly clivers or hayut. The manner in which I recommended it to be taken, and which was strictly attended to by the old woman, was as follows:—She first took a mercurial purge; was charged to abstain from salt meat, and to use only thin diet, and twice a day to drink a quarter of a pint of the juice of clivers, which she had well pounded and squeezed. At the same time I advised the juice to be boiled and mixed with hog's-lard, so as to make a very soft green ointment, and continually apply it to the wound, laying the bruised clivers over it; and I ordered her to put fresh as often as it dried, and to take particular care to keep the wound clean. All this was immediately put in practice, partly by compulsion and using great importunity; for the benefit was so very gradual that I could scarcely persuade the old woman she was better for it; and I myself began to be under some doubts, but was encouraged by the offensive smell being somewhat abated, and her being yet alive, which were convincing proofs to me that a

cure would in time be effected. Accordingly I pressed and insisted on her continuing the practice as above ; and it being a mild winter, there were clivers to be had in warm hedges. The same course was continued, and in three months after, the wound was healed. I afterwards advised her to take them every spring, which she did constantly, and by that means prevented any return of her disorder.

Some time after, I had an opportunity of putting the receipt again in practice. Dr. Bullman, of Lincoln College, had an acrid humour breaking out in blotches all over his arms, somewhat like a leprosy. As I was acquainted with him, I told him of the case above mentioned. He said, mercury and Ethiop's mineral, &c., had never reached his case. He resolved from what I said to try clivers. Accordingly he applied the ointment and drank the juice, and was perfectly cured in a quarter of a year. He told me he had improved my prescription ; for besides taking the juice, he had constantly eaten clivers as a salad with oil. These two cases I know myself, and pray God they may be of service to the person you mention.

A poor man who had been employed by San-

dawan of Hertfordshire, had a cancer in his face, which had eaten so much of it away that he was an object too bad to appear about the house. He, likewise, took the juice and used the ointment in the manner above recommended, and is now perfectly well.

The receipt for making the cliver-ointment, is as follows:—To a pound of hog's-lard melted, without spice or salt, put as much clivers as the lard will moisten, and boil them together over a slow fire. After stirring it till it begins to look a little brown, strain it through a cloth, and when cold take the ointment from the water that will remain at the bottom. The bruised leaves being applied do often stay the abundance of blood issuing out of the wound. Observe to keep the wound clean, take physic and drink the juice at least a week before the ointment is applied. I before observed, that laying the clivers over the wound was thought to be of great use; but they heat the part prodigiously. When that is the effect, they should not be applied too frequently, as it would not only be painful, but heal too fast.*

* Gentleman's Magazine, for 1790, p. 1164.

Case of malignant cancer in which iodine was administered with powerful effect by George Nesse Hill, surgeon, Chester.

Dec. 20th, 1822.

I was requested to examine the right breast of a widow, aged 62, of a shattered constitution, having led a laborious life, and been the mother of ten children, exclusive of abortions. The breast presented a large, hollow, fetid ulcer, with ragged, thickened, hard edges, the subjacent ribs bare, but not denuded of their periosteum. Her general health was deranged, appetite bad, with frequent cough; her situation in life in every respect unfavourable. I directed a carrot poultice to be applied, and renewed every five or six hours. Medicines to be taken to regulate the bowels; and when the evacuations assumed a tolerably healthy appearance, the Fowlerian solution was commenced; and happening to agree with the stomach, (by which expression I mean to be understood that this organ admitted of its use being pushed to fifteen drops twice or thrice per diem,) in two months amendment was visible. Her general health was improved, the ulcer became less offensive. A weak mixture of the solution and pure water was applied with

lint, and over that the carrot cataplasm. In short, at the end of eight months, the general health was improved, and the appearance of the ulcer such as to justify the trial of Mr. Young's mode of cure by compression. Just at this juncture, an accidental visitor from London was at my house, who had been successfully treated by this method. She spoke highly of it, said her breast had been condemned to be removed by some eminent surgeon; but as she was unwilling to suffer the operation, she applied to Mr. Y., and was now free from every vestige of the disease. Having procured the apparatus recommended by Mr. Y., it was applied conformably to the rules laid down by that gentleman, with steady diligence, and borne with equal patience, until, in the course of three months, the edges of the sore assumed the appearance of cicatrization; but the whole surrounding parts, and particularly the axillary glands, became so painful, and a provoking discoloration in the centre of the ulcer, (from which spot she described the pain as all emanating,) compelled us to lay aside the pressure apparatus as incompatible in this case. The unhealthy spot at the fundus of the ulcer now rapidly enlarged, and threw out a

large tubercle of a livid appearance. This diminished and looked better under the use of *sulphas cupri*. The surrounding parts were dressed with the *pulv. cretæ. ppt.* according to Mr. Kentish's mode, the cinchona and opium were administered; and, at the close of the first year of my attendance, the ulcer had assumed a favourable aspect. Spots of new cicatrization were once more visible; but their next-door neighbours were the hard ill-looking tubercles, soon accompanied by incurvated edges, and a general tendency to bleed from small nipple-like eminences of the fungoid kind. Dry lint imbued with flour and *sp. tereb.* generally succeeded in stopping the blood; the bolar earth with alum never failed. The longest diameter of the ulcer now measured six inches; the general health still good, a little cough excepted. Thus we went on to the end of a second year, without gaining or losing much ground, except that the insulated spots of cicatrization which had appeared under the use of the chalk were no longer visible; the discharge from the whole corroded surface was copious and gleety. At this juncture, having put to the test every local application and internal remedy I could think of, the powerful effects

of iodine were suggested to me by a very ingenious friend and chemical artist of this city, as worthy of trial in all desperate cases of tumour and vitiated ulcers. I gladly caught at the hint, and applied an unguent, consisting of one scr. of the hydriodate to one oz. of the purest axung porcin. This was the dressing twice a day; it not only gave no pain, but, as my patient observed, "felt comfortable." In a few days, the quantity of discharge was diminished, and its quality improved, the whole surface of the sore assuming a healthier aspect; the ill-coloured tubercles softened and gradually sloughed away, recalling to mind the applications of our forefathers, designated "detergents." In a few weeks, the whole surface wore the most flattering appearance possible. Any surgeon whose eye had been directed to this poor sufferer's breast would have said, "Here we have a state of fine healthy granulation:" in truth, nothing could look better, or afford a more healthy discharge; all the surrounding hardness was softened and ultimately removed, as though there ^{never} had existed any breast. The left breast underwent a similar process; there is not the vestige of a nipple even to be found (more than a minute brown spot) on the closest inspection.

Soon after commencing the use of the *ungt. hydriod.*, the solution was administered in the proportion of grs. xxxvi. to the ounce of *aq. distil.* Her stomach bore thirty drops easily, but beyond this she could not advance without nausea; the lancinating pains and occasional bleedings of the breast entirely ceased: the evening dose of opium was dismissed. After pursuing this plan for four months, all the inferior portion of the ulcer was completely cicatrized. This process taking place from below upwards, in the course of another month a patch of lint the size of a sixpence would cover the uncicatrized part. Above this, at the top, there remained a hard ridge, not half an inch long, resembling the edge of a child's little finger, quite dry, painless, and of a bright red colour. I directed this to be rubbed with *ungt. hydriod.*, twice daily, the solution to be continued; and so sanguine were my hopes now become that my poor patient would ultimately attain a perfect cure (*cure of cancer!*) that I cannot find language to express my feelings; but these feelings will be well comprehended by all who are enthusiasts in their profession, by all who love their species, and by all who are daily witness of the sufferings of

human nature under all the varied forms of cancer.

I now saw Mrs. S. only once a week, and expected to find the remaining hard edge of the old ulcer becoming softer, and yielding to the fate of all its predecessors; viz. to soften, to ulcerate, to slough away, and, like them, leave a smooth shining surface adherent to the costæ; but this was anticipated happiness destined to share the common fate. The little stubborn ridge did not yield to the rubbing with the ointment, increased to three-fold its strength, but enlarged, became of a purple hue, divided into tubercles, contaminated a gland or two in the axilla; fretted edges, incurvation, gleety discharge, and reopening of the fixed cicatrix soon followed; so that in two little months the size and general appearance of the ulcer had resumed its original greatest dimensions, the emaciation recommenced its career, the countenance betrayed the existence of cancerous diathesis; and, in short, nothing now can be expected but that termination to dreadful suffering which so many thousands have experienced. This narration, so calculated to exercise the reader's patience, is given with a view to exhibit the effects of iodine in a

case hopeless when it was first employed. What it is capable of effecting when called into service in the earliest stages of foul, malignant, or cancerous ulcer, remains to be proved by successive trials. That it is an agent of great power and manageable qualities I think cannot be doubted.*

Chester, October 15, 1825.

CASE.

SARAH T——, aged 52, was admitted into the Middlesex Hospital under my care, March 1st, 1842, with an irregular indurated tumour in the left breast, about the size of a small apple, which had existed for nine months. She was married, and had eight children, the youngest being eight years old. She was of good constitution, with no hereditary predisposition to malignant disease. The catamenia had been regular. She was ordered five grains of the pill of iodide of mercury every night; decoction of bark, one ounce and a half, iodide of potassium, five grains, three times a day; and a lotion to be kept constantly applied to the swelling, made of two drachms and a half of the hydrochloride of ammonia to

* Lancet, Vol. x. 1825-6, p. 110.

six ounces of rectified spirit. She continued those remedies until the 25th of April, having been completely free from pain, and the tumefaction had been gradually diminishing. When she left the hospital, little or no hardness could be felt in the original seat of the tumour, she did not feel any pain or inconvenience whatever, and she remained quite well for some time afterwards, and until we lost sight of this patient, but still we considered her quite cured.

C A S E.

CAROLINE W——, nurse, aged 49, admitted to the Hospital under my care, 23rd July, 1838, with an irregular scirrhus tumour in the left breast, which she first discovered about fifteen months before. It had rapidly increased lately, and she had frequent lancinating pain through the swelling, commencing from the nipple and shooting up to the armpit, and above the collar-bone. It was movable. She felt much pain after it had been handled, and she could not bear it being pressed upon. She could give no account of her having received any injury; but from her occupation, of a sick-nurse, she was very likely to have received some blow. She was short and stout, of a sanguineous habit of body. Several remedies

were employed in this case, locally as well as being exhibited internally, but all appeared to have little or no effect upon the tumour, as it gradually increased in size, and the pain became more severe and frequent. The necessity of having recourse to an operation was pointed out to her, and she was told it would be advisable for her to have the tumour removed as early as possible; and on the 7th of September I removed the breast by two elliptical incisions: every part of the irregular diseased structure was completely extirpated; the edges of the wound healed regularly, and she left the hospital nine weeks afterwards. This patient was lost sight of until the following year, when she presented herself for readmission, and was taken into Whitbread's ward on the 15th May, 1839. There was a small ulcer on the inner part of the cicatrix, considerable swelling on that side of the chest; the hand, arm, and shoulder were much swollen, the glands on the left side of the neck were considerably enlarged; she suffered a great deal of pain in the breast, neck, and wrist, the latter feeling as if a cord was bound tightly round it; her appetite was very indifferent, she often felt sick, she could not rest at night, suf-

fering from frequent cold perspiration, the pulse was quick and small, tongue furred. Anodyne applications were used to the arm and left side of the chest; she took iodine, mercury, conium, opium, morphia, and a great quantity of other medicines of a similar nature, but to little purpose, as the cancer rapidly increased; she felt some benefit from the effect of morphia, as it procured a little refreshing sleep; but all remedies failed to touch the disease, which increased until the first of September, 1839, when death put an end to her sufferings.

REMARKS.

Upon examining the tumour after it had been extirpated in this case, it had every appearance of a scirrhus tubercle: it was hard and firm in the centre, with roots springing out from all sides; when bisected, the centre was hard and pear like, and when pressed, a thin milky fluid exuded; the circumference of the tumour was softened and fibrous, and the roots sprung out in a radiated direction from the centre to the surrounding parts.

POST-MORTEM EXAMINATION.

Upon examining the adjacent parts below the

cicatrix, extensive disease was found, with irregular scirrhus tuberculated swellings adherent to the pectoral muscle, which extended deep to the ribs, as well as their cartilages, which were both affected with the disease: the ribs were soft and fragile, so that when pressed, they yielded, and soon broke. Scirrhus tubercles were seen in the cavity of the chest. The ulcer had numerous small tubercles upon its outer surface, appearing to project internally: there were also several of the same tuberculated spots upon the outer surface of the lungs; the liver was also similarly affected. There was quite sufficient diseased structure to account for the rapid decline of this patient; and upon examining the various tubercles and viewing the disease generally, it exhibited the true tuberculated carcinomatous character: so that little or no good could have been expected from any remedies, which proved to be the case from the exhibition (as already stated) of all the medicinal preparations known at that period.

CASE.

SOPHIA B———, aged 56, admitted into the Hospital, Feb. 14th, 1843, under my care, with an open cancer on the upper part of the left breast, on

the outer edge of the pectoral muscle, about the size of a moderate orange. She first discovered the swelling in July, and it broke the beginning of January. There had been very little discharge but the pain had been very severe, going through to the shoulder. The tumour was hard and circumscribed, could be freely moved over the pectoral muscle, and the substance of the mammary gland could be easily detected upon the inner and lower border of the swelling. The tumour had an irregular circular ulcer upon its central and most projecting part, which had an unhealthy appearance. She was ordered to apply the following lotion very frequently, so as to keep the swelling constantly wet with it:—

Chloride of carbon, one drachm ; water, one pint : make a lotion.

17th.—Pain much relieved since she used the lotion ; the skin at a little distance from the swelling appeared paler, but at the edge of the tumour there is an areolar inflammatory blush, which is of a higher colour towards the tumour. She was ordered to take the following medicine three times a day :—

Chloride of carbon, two drops ; caraway water, one ounce and a half. Mix to make a draught.

19th.—The cancer bled a little yesterday afternoon; she did not begin the new medicine till five o'clock in the morning. It had somewhat griped her, and her bowels had acted twice since she took it: generally the bowels act only once a day.

20th.—No griping or purging; said the medicine agreed with her.

21st.—The pain in the breast had been much relieved by the lotion and medicine: she had slept well, but did not feel refreshed when she awoke.—Increase the dose of the chloride of carbon to three drops three times a day.

22nd.—A little bleeding this morning, much less pain in the swelling, slept well, and appeared to be going on favourably.

24th.—Suffered much pain yesterday; seized this morning, after taking the medicine, with shivering and trembling, and was now cold and pale: pulse, one hundred and thirty; bowels open, no trouble in passing water. Said she felt a sensation about the breast, "as if a tree was being rooted out of a flower-pot."

25th.—Had been very drowsy and constantly sleeping since yesterday; felt light-headed, and had partly, she said, lost her hearing; pulse, one

hundred and thirty ; when out of bed was weak and like a tipsy woman ; was sick last night.—In no pain.—Bowels confined.—Omit draught and lotion—to take a black draught directly.

27th.—Still felt sleepy at times, and had slept nearly the whole time since our last report. There was some sloughing of the surface of the ulcer, particularly at the centre of the tumour, which appeared generally less. The redness around the swelling, which had been previously mentioned, had increased, and had extended. The veins, which were not to be observed before, now are to be seen very distinctly : they are of a bluish colour, and seem much distended.

28th.—The sloughing appeared to be very deep, it was separating superficially, and it appeared that absorption was taking place around the slough, as in some parts there was a very clear line to be seen : she was free from pain, but complained of being weak, and having no appetite ; but said, that since she took the medicine she had wished for food. Bowels open, tongue a little white, pulse, one hundred and twenty-five.—A poultice to be applied to the breast. To take a draught three times a day, composed of infusion of

gentian with a scruple of sesquicarbonate of soda.

March 1st.—Complained of being weak, but had a little more relish for her food; she had little pain in the breast; pulse one hundred, tongue less white; the slough was loosening.—The poultice to be still applied.

4th.—The sloughing of the ulcer was pretty deep and was separating; the veins, which were to be seen, are now not to be observed, the redness around the slough had subsided, but there was a good deal of hardness around that part of the tumour where the slough had come away already.

7th.—More of the slough had been removed by the poultice, and the parts beneath appeared healthy; but the thickness remained: the hardness had the same feel as cancer. Her health was better, she suffered little pain, and altogether said she was very comfortable.

10th.—Going on much about the same, some more of the slough had separated.

13th.—Still going on well, all the slough had not as yet come away; she still was free from pain: bowels regular, appetite better, tongue clean.

17th.—The whole of the slough had not come

away, particularly at the bottom of the excavated surface; the edges were healthy, but thick and hard, and when felt by pressing the fingers on each side, give the same feel as any other cancerous tumour; she suffered little from pain, slept well at night, the appetite was improved, tongue clean, pulse, one hundred, and she appeared to be excited by my visit.

21st.—All the slough had not been removed; small portions came away each time the poultice was repeated; the hardness around the seat of the slough remained much about the same; she did not suffer much pain, but expressed herself to be very weak and low: pulse, one hundred, tongue clean, bowels open.

24th.—Part of the slough still remained attached to the lower part of the excavated surface: the nurse stated that small pieces still came away each time she removed the poultice: the hardness of the edges of the tumour remains about the same, and in other respects she was about as well as on the last visit. A little fetor arose from the swelling.

28th.—The slough had not as yet completely separated, and the fetor had increased, the edges of the ulcerated surface were thin and somewhat

inflamed : a solution of chlorine and water was ordered to be applied to the excavated surface.

31st.—The excavated surface had much the same appearance ; the slough still remained attached to the lower part of the wound ; less fetor ; the edges remain in the same condition.—The strength of the lotion to be increased.

April 4th.—The ulcerated surface continued much about the same, small pieces of slough are attached to the bottom of the sore, the lotion did not appear to remove them. The nurse was ordered to use the lotion with the chloride of carbon with a syringe ; so as to apply it to every part of the excavated surface.

7th.—The wound had a better appearance, the slough in some parts has been detached ; and she said that she had been much better since the last lotion was employed.

11th.—The wound had improved, it was cleaner, and the granulations were of a more healthy appearance ; she was free from pain : the lotion was used daily, and a poultice of bread and water applied afterwards. Considerable improvement took place in this patient's general health, and the appearance of the wound ; at one time it had almost entirely healed. When she

suffered any pain, she was always relieved by a dose of the chloride of carbon ; a solution of this preparation was daily employed as an injection over the ulcerated surface. The patient continued in the hospital, was always very cheerful, and appeared happy and contented : she walked sometimes in the garden of the hospital, and seldom felt any uneasiness. At the early part of November, she complained of great pain in the chest, with palpitation and difficulty of breathing. This increased, and there was evidently much swelling on the left side, over the situation of the heart. The breast remained about the same; but the difficulty in the breathing increased, together with the shortness of breath : there was evidently a collection of serum forming between the lining membrane of the heart, which did not yield to the remedies usually employed under such circumstances ; and she died on the 21st November, from hydrops pericardii.

CASE.

MARY ANN D——, aged 21, admitted Nov. 29th, 1842, under my care, with an irritable tumour of the left breast, which she had suffered from for several months. She consulted a sur-

geon, who gave his opinion that it was cancer, which she believed, as several of her family had died of that complaint. She felt a good deal of pain in it, which varied at intervals. Her general health was good, catamenial discharge regular, and she felt less pain at these periods than at others.—Hydrocyanic acid lotions, iodide of potassium ointment, with belladonna were severally applied to the breast, with little, or at least with no permanent benefit.

7th.—The breast remained much about the same, but, if any thing, a little less, and not so hard as when she was admitted, the pain had diminished a little. At the periods of her menstrual discharge, the breast became quite soft and natural; but as soon as the discharge ceased the hardness returned together with the pain. Leeches, when they had been applied, had not produced the same effect.—She was ordered to use the following lotion frequently :—

Chloride of lead, 2 drachms,

Water, 1 pint : mix, to make a lotion.

10th.—Complained of twitchings of the left arm with numbness; the breast had been free from pain since she used the last lotion; the twitchings were considerable in the arm.—Omit the lotion.

16th.—No twitchings since she left off the lotion, but the arm felt weaker than the other; still her breast was less, but as painful as when she was admitted.

20th.—Complains of twitchings in the palms of her hands, but said they were not very severe.

24th.—The swelling in the breast was somewhat less, but the pain was about the same: the other breast was now natural; the twitchings had ceased. An ointment was ordered to be used, with a drachm of chloride of lead to one ounce of spermaceti ointment; a small quantity to be rubbed over the left breast every morning.

28th.—The breast remained much about the same; the pain had diminished since the use of the ointment, but the swelling and hardness were in the same condition.

31st.—She remained much the same, and the hardness had not diminished.—To take a pill every night of five grains of the pill of iodide of mercury; to take also Griffith's mixture, two ounces three times a day, and to use the ointment of iodide of mercury to the breast.

April 10th.—She had been using the ointment every day; it made the skin sore: she had also continued the pills. The hardness of the

breast had diminished, and the pain had not been so severe. The other breast occasionally troubled her; but generally she appears better.

From this time she gradually recovered, the whole of the hardness of the breast disappeared, her general health improved, she could freely move her arms in every direction, and she was discharged from the hospital cured on the 9th of May, 1843.

C A S E.

ELIZABETH W——, aged 49, a strong, healthy-looking woman, was admitted under my care Feb. 14th, 1843, with irregular ulceration and hardening of the os uteri, with much discharge of pus and blood, severe pain at the lower part of the abdomen and back. Had had the pain for seven months, and the discharge of blood ten months; likewise the weakness in the back, with pain running down the inner part of the thighs. To use the following injection frequently:—Chloride of potassium, half a drachm; water, one pint: mix.

17th.—No discharge since admission; pain as severe as ever. She had been using the injection three times a day: to use it more frequently.

19th.—Much the same, no discharge of blood,

bowels confined ; to take a dose of house-medicine immediately.

21st.—Felt easier since the aperient had acted, discharge less, and no blood had appeared since she had been admitted.—To take chloride of zinc, half a grain, caraway-water, an ounce and a half every morning.

22nd.—Suffered severe pain last night, discharge returned upon her when sitting up. Bowels confined.—A dose of house-medicine directly.

24th.—Much purged (with pain) last night.—Add to the mixture, tincture of opium, twelve drop to each dose.

28th.—Complained of much pain in the back, particularly when she stood up ; discharge about the same.—Diluted hydrocyanic acid, thirty drops ; water, half-a-pint : to make an injection.

March 1st.—Pain had not returned : some discharge of blood to-day, but not to so great an extent as she had before her admission.

13th.—Suffered considerable pain, with copious discharge.—Decoction of oak-bark, one pint ; compound solution of alum, one ounce : to make an injection.

17th.—She could not use the injection, the pain was so severe ; it produced smarting and burning

heat, which continued some time : pain in the back very great. She was desired to dilute the injection with water, and then to use it.

21st.—She tried to use the injection again, but could not continue it, the pain was so very severe.

24th.—Pain was very great ; the back was in violent pain ; the discharge continued, and she expressed herself to be much worse since her admission.—She was ordered to take, three times a day, chloride of carbon, two drops, in distilled water.

28th.—The pain was relieved, but still very severe at the back.—An injection was ordered to be used twice a day, composed of chloride of carbon, one drachm, distilled water, twenty ounces.

31st.—The pain had been diminished, the injection had brought away a great quantity of discharge and corruption :—she was directed to use it four times a day.

April 3rd.—The house-surgeon inquired if there was any objection to allow this patient to return home, as she would much sooner leave the hospital and die at home than in the house : she had permission to leave if she pleased.

This patient returned home on the 4th of April. She suffered very considerably afterwards from severe sickness, and lost flesh very

rapidly, gradually sunk, and died ten days after she left the hospital.

CASE.

JANE B——, aged 63, admitted into the Middlesex Hospital, under my care, Nov. 29th, 1842, with scirrhus of the os uteri. She stated that about eighteen months previously she felt as if flooding had taken place; and from that time a very unpleasant discharge continued, with lancinating pains, extending to the liver: she felt weak, and had much difficulty in walking even a short distance. Upon examination there was much irregularity of the os uteri, which projected considerably into the vagina. The uterus itself was much enlarged, the irregular edges of the os uteri were ulcerated, and excessively painful when the finger came in contact.—She was ordered to use an injection frequently, composed of chloride of zinc, ten grains, water, one pint: mix to make an injection; and to take a pill twice a day of half a grain of opium and five grains of extract of hemlock.

Dec. 6th.—She found much relief from the use of the injection; the discharge had diminished, and she was comparatively free from pain.

—The bowels being confined, she was ordered to take directly six drachms of compound decoction of aloes, with the same quantity of caraway-water.

10th.—She had been improving since our last report, but complained of being very weak and low.—To take six drachms of decoction of bark with the same quantity of compound decoction of roses three times a day.

20th.—She had gained some strength, the discharge was less, and she did not suffer from the pain.—The injection was ordered to be increased in its strength, five grains more of the chloride of zinc to the pint of water.

30th.—She had improved ever since her admission, the pain had considerably diminished, and a great change had taken place in respect to her general appearance and her general health.

Jan. 17th.—From our last report this patient had been gradually getting better; she suffers little pain, and slight inconvenience from the discharge. She had improved so much that she was this day made an out-patient, and desired to attend on the following Saturday.

21st.—She had continued much the same since she left the Hospital. Her general appear-

ance after this time was much improved, she felt little or no pain, would walk a long distance without much fatigue, and altogether felt greatly relieved from the plan of treatment recommended.

C A S E.

ANN R——, aged 36, admitted under my care at the Middlesex Hospital as an out-patient, Nov. 29th, 1842. She stated that about a month before she felt much pain and very uneasy sensations in her left breast, which was swollen and very hot; she could not move her arm freely, particularly behind her, nor could she bear the stay to press against her breast; the inconvenience had gradually increased, which obliged her to apply at the Hospital. On examining the breast, an irregular tumefaction was felt on the outer and lower border of the left mammary gland, extending from the nipple to the outer circumference of the breast. This tumefaction was harder in the centre than at its upper or lower boundary; it caused her much pain after it had been pressed, and prevented her sleeping at night: she was regular, and appeared of a scrofulous habit of body.—She was ordered a pill of iodide of mercury five grains every night, and two pills of five

grains each of compound extract of colocynth every morning, and to apply to the breast a piece of linen soaked in a lotion of sugar of lead and opium.

Dec. 6th.—She found relief from the application of the lotion; the breast had not been so hot or painful. The pills she took every morning had acted on the bowels freely, the night-pills she observed had but little effect.—She was ordered to continue the same treatment.

10th.—She was still better, but occasionally she suffered much pain in the breast; and she complained of crying fits coming over her, with a rising in the throat as if a ball was choking her, together with a pain on the upper part of the crown of her head.—The lotion to be continued. Compound steel mixture, two ounces three times a day.

17th.—The breast had been more painful; it was hard, and she complained of it hurting her for some time after it has been examined.—Apply the muriate of ammonia lotion to it constantly.

24th.—The lotion had not relieved the pain in the breast; it had been hot, and she could hardly bear the stay to press against it.—Six leeches to be applied to the breast, which was afterwards to be fomented well with warm water.

Jan. 7th.—The breast had been much easier since the leeches:—the lotion with lead and opium to be applied to it; to take at night ten grains of the pill steel and myrrh.

28th.—Had been much better since; the pain had not been so severe.—Continue the pills and lotion.

Feb. 4th.—The pain in the breast had returned, and was as severe as before.—Solution of diacetate of lead, forty drops; camphor-mixture, half-a-pint, to make a lotion: continue the pills.

18th.—Pain in the breast had been relieved, the hardness less; but now complained of pain in the other, which was hard and irregular.

March 4th.—Pain less severe in both mammary glands; hardness less; bowels not open.—Omit the former pills; take compound extract of colocynth, one drachm, croton oil, two drops, mix well and divide into twelve pills, take one every morning.

11th.—Had been much better; the pain in the breast had been considerably less severe; the hardness was diminishing.—Continue the pills and lotion.

18th.—Much better; the hardness in each gland had considerably diminished, and the pain had not troubled her. Her spirits were good,

and she said she was gradually getting better.—Continue the pills and lotion.

25th.—Still continued to improve; the hardness and irregularity had been gradually diminishing; her health was much better, and she was getting well.

April 1st.—Continued to improve in every respect.

14th.—This patient returned thanks for being cured: she now felt quite well; the breasts were restored to their proper state, and she did not suffer from any inconvenience, and expressed herself very grateful for the benefits she had received.

C A S E.

MARY B——, aged 42, admitted into the Middlesex Hospital, under my care, Feb. 14th, 1843, with a large irregular open cancer on the right breast, extending deep into the axilla: foul, yellow, excavated surface; copious discharge, with much fetor and severe pain. She had had a scirrhus tumour of the breast extirpated by Sir Astley Cooper, two years and nine months previously: after the operation, the wound nearly healed, but broke out again into ulcerations a fortnight afterwards. Only the scirrhus lump was removed, the rest of the breast with the nipple was left.

15th. The ulcerated surface presented a very unhealthy yellow appearance, and the fetor arising from the discharge was very considerable.—She was ordered to use the following lotion : chloride of lead, one drachm ; water, one pint : mix to make a lotion.

17th.—The surface of the cancer was more healthy (in certain parts) in appearance ; the pain was less at the lower portion, but much the same above.

21st.—The surface still had a more healthy appearance: the granulations were red and healthy, and the edges of the ulcer put on the appearance of healing.—She was ordered to take the following draught three times a day : chloride of potassium, ten grains, caraway-water, one ounce and a half.

24th.—Whole surface of the ulcer much cleaner ; pain varied ; complained of a queer sensation in the head, with loss of memory, and a dullness all over the head.—Omit the medicine with the chloride of potassium.

March 13th.—The whole surface of the ulcer had been much better, and the edges are cicatrizing slowly ; pain was less, and the general appearance of the ulcer improved, and she appeared

to be going on favourably ; the fetor from the discharge had ceased entirely.

17th.—The edges of the ulcerated surfaces appear healthy, and at some parts have healed to the extent of an inch ; but this part appeared to be only covered with a very thin membrane, and did not look like the healing of any other wound. In parts about the centre there are to be observed more unhealthy excavated surfaces, which put on nearly the unhealthy appearance of the wound as at the admission of this patient. She said that she was as free from pain as she could expect.

21st.—The wound was still healing round the edges : the parts that have healed appear to be covered by a very thin membrane, giving a sensation to the feel like any cancerous ulcerated surface having a piece of gold-beater's skin fixed upon it. This membrane was probably cuticle. The irregular excavated surfaces are still more unhealthy than when examined last. Towards the axilla which was deep at first, extending quite into the hollow of the armpit, the wound had filled up to a great extent, and was healing at the edges, with the same appearance as the other parts. She did not suffer much pain, but had been complaining of a

gripping sensation in the bowels, for which an aromatic draught had been prescribed. She had taken no medicine since the chloride of potassium, except some compound squill pills for her cough. There was no fetor from the discharge, and the unhealthy appearance mentioned, had the same character as the hardness to be observed at the edges of a stump after amputation, produced by the lead in the adhesive plaster.—She was desired to continue the lotion.

24th.—The ulcerated surface remained about the same : the discoloration continued, and appeared to approach more to the surface, towards the parts that had healed. She was pretty free from pain, and the bowels had ceased to distress her. The healing of the ulcer had increased a little at certain parts and towards the axilla a great improvement had taken place.

28th.—The ulcer in the centre had much the same appearance, the edges were not so healthy. Small ulcers, which seem to extend deep, had made their appearance ; they were about the size of a pin's head ; and the thin membrane covering the edges appeared to be absorbed at certain parts.—Solution of chlorine, one drachm ; distilled water, one ounce and a half : to be taken three times a day.

31st.—The ulceration was about the same, with the exception of the edges; the small ulcers had increased, and some of them had acquired the size of a small pea; they appeared deep, and contained a thick white discharge.—The lotion of chloride of lead to be discontinued, and a lotion substituted, of one drachm of the chloride of zinc, to half-a-pint of water. She said that she did not think the last medicine agreed with her so well as the first.

April 4th.—She has been using the lotion since our last visit, but the ulceration remains much about the same: the application had not caused her pain or any inconvenience.

7th.—Remained much in the same condition, perhaps at parts the ulcerated surface had a more healthy appearance.—The strength of the lotion to be increased to two drachms of the chloride of zinc.

11th.—The ulcerated surface had a more healthy appearance at some parts, and the edges were better; the white spots have diminished in size and depth; the lotion caused no pain; and on the whole she said she remained much about the same.—The strength of the lotion to be increased.

14th.—The cancerous surface had a more clear appearance, with less discharge. She complained

of pain in the chest, with some difficulty in breathing. From this period, the ulcerated surface varied in its appearance considerably : sometimes when examined it would impress you with the idea that it would heal entirely, at other times it was more unhealthy ; but she was free from pain. She suffered frequently from great difficulty of breathing, and died no doubt from water in the cavity of the chest ; but this could not be ascertained, on account of her friends not allowing the body to be examined. She died on the 30th of June.

CASE.

Scirrhus of the pylorus successfully treated by the chloride of carbon.

J. T——, aged 56, formerly government agent for army contracts, &c., admitted into the Hospital Dec. 23rd, 1845. Pale, emaciated, and pinched features ; occasional vomiting of yeasty, offensive fluid, especially in the morning whilst fasting ; pyrosis ; food returns within three or five hours after eating, quite undigested ; bowels costive ; occasional heat and soreness at the epigastrium. These symptoms have been gradually creeping on for two years past ; they were preceded by several attacks of vomiting of blood,

and he has had eighteen attacks of the same within this period : no tumour in the abdomen perceptible.—He was put on small doses of compound chalk-powder with one-sixth part of a grain of calomel, iodine-ointment was rubbed over the epigastric region ; he took one-quarter grain of morphia every night.

January 3rd, 1846.—Discharge of offensive yeasty matter came on, for which he took chalk and opium in powder, with a grain of rhubarb, three times a day, and continued the morphia.

18th.—Sickness, nausea, and acid eructations set in constantly, for which he took the diluted hydrocyanic acid in saline effervescing draughts. Not finding much relief from this medicine, on the 20th he was put upon two drops of chloride of carbon, in half-an-ounce of distilled water, three times a day, and has continued the same up to the present time, (February 28th, 1846.) He states that he feels himself in better health, and stronger in his stomach than he has done for several years : his countenance, though still indicative of malignant disease, is certainly improved in appearance, and he is able to walk about with comparative ease ; appetite is good, sleeps well, is in better spirits, and is entirely

free from pain. This statement he has furnished during the last few days, (Feb. 28th.)

Another case of scirrhus of pylorus successfully treated with the chloride of carbon.

CASE.

REBECCA H——, aged 48, married, 10 children, and 4 miscarriages, 4 living; admitted into the Hospital January 17, 1845. Extreme emaciation; constant pain at the pit of the stomach, aggravated by all food, especially solid; which pain was only relieved by vomiting; unable for three years past to take any meat without instantly rejecting it; and whatever food was taken required double the usual length of time for mastication, otherwise the most simple food was rejected. Pork, veal, fried fish, and roasted meats were and are still deleterious articles of food; but has not touched any meat for ten months. Pyrosis and occasional bilious vomiting for ten months past; bowels habitually constive; has had much medical treatment, without relief, being unable to retain medicines on her stomach for the last three years.

Jan. 8th.—Was immediately put under chloride of carbon, two drops, camphor-mixture, one ounce, three times a day; beef-tea, a pint; milk, a

a pint ; bread, twelve ounces, each day. In the course of three days the above symptoms were strikingly relieved ; has had no vomiting, and the only complaint she made was of her constipation. At the termination of a fortnight all her gastric symptoms had apparently disappeared, and she was able to retain her food on her stomach with comfort ; but she began to suffer from the usual effect of the chloride of carbon ; viz.—stupor, headache, and disposition to sleep, without absolute rest.—Was now put on the hospital-draught of compound hydrocyanic acid, a belladonna plaster was applied to the pit of the stomach ; and mutton, broth, and beef-tea were given ; since which she has been so far improved as to appear convalescent, and craves for meat, but is afraid to attempt to eat any, having scarcely any teeth in her head ; and she declares herself better than she has been for three years past. She had prolapsus uteri, which caused a desire to make water more frequently than usual ; with this exception, she looked and expressed herself in very tolerable health.

C A S E.

ANN S——, aged 39, cook, admitted into the Middlesex Hospital, under my care, Nov. 12th, 1839, with an extensive disease of the

right breast, which extended from the lower border of the pectoralis major to the upper part of the neck below the inferior maxillary bone; the whole of the arm was considerably enlarged, so that the disease appeared to involve nearly one-sixth part of the body. She stated that the glands in the armpit first became enlarged, and she found that the smaller ones arose from cold about three years previously; since that time they have gradually increased, at last affecting her breast, producing great tumefaction of that part, and swelling of the whole of the hand and arm, so that she could not use the arm, or scarcely bring it to her side. There was an irregular ulcerated surface below the nipple, which appeared to be buried in the surrounding swelling. The ulcer extended from the nipple towards the axilla, its edges were irregular, but its surface superficial; the whole of the enlarged parts were hard and very firm to the pressure of the finger; and even in the arm or back of the hand little or no indentation could be made; the glands in the neck were extremely hard and irregular, and it was with difficulty that you could distinguish by the feel even the situation of the bones; and the cancer appeared

of a very rapid and malignant character.—The ulcer was ordered to be dressed with the white precipitate ointment, and she was directed to take five grains of extract of hemlock and opium, in a pill, three times a day, and twenty-five drops of laudanum in camphor-mixture every night going to bed. She continued the use of the ointment for about two months, and also the pills, with some variation in the medicine, but with little or no effect upon the swelling, or upon the disease. The ulcerated surface increased in its size and depth; and altogether the cancer progressed, and the swelling of the arm was much greater, although flannel rollers were constantly applied to produce absorption. As the chloride of zinc paste had been successful in several cases in the hospital; one drachm of chloride of zinc, three drachms of flour, to be made into a paste, and applied to the ulcer with a camel hair brush. The first application of this paste had very little beneficial effect; it was therefore used again, when a slough took place, which was poulticed. It was resolved to give the chloride of zinc a trial internally, and half a grain was ordered in an ounce and a half of caraway-water, to be taken every morning after breakfast,

and a lotion to be applied to all the parts that were swollen, composed of two drachms of chloride of zinc to two pints of water. The application of the paste the second time produced acute pain for four or five hours, when a slight slough separated by the aid of a poultice, the ulcer then granulated and healed kindly. The swelling in the arm gradually subsided; the neck considerably diminished in size; that side of the chest changed its appearance, becoming more natural in shape and size, and in about a month after the use of the above remedies the case had completely changed its character, the arm being nearly of its natural size, the breast was soft, also the neck and every part of the superior extremity. But in several places there were small tubercles to be felt, some the size of a split pea, others a little larger. These were irregular: there were six or eight of them at different places over the mammary glands, one or two in the neck, and one in the arm; between the deltoid muscle and pectoralis major they appeared to be enlarged lymphatic glands. In fact, the disease had now changed its character, and assumed the cancerous tuberculated form; the wound had entirely healed, and she said she had never felt better in health.

She continued the medicine, the dose having been increased to three-quarters of a grain every morning for about two months, complaining occasionally that it was very unpleasant to take, as it tasted like metal. At the end of this time it made her gums and mouth sore. We were all struck with the vast change for the better that had taken place in this patient; and few people who had not seen her would have believed that it were possible for such an effect to have been produced.

At this period the wound was perfectly healed; the swollen arm, breast, and glands had nearly resumed their natural size; the disease seemed subdued, and she appeared to be in very good health. The effect produced by the exhibition of the chloride of zinc lasted only a short time: it was left off on account of the mouth being sore. The arm began to swell again, and the breast to become tender and painful; an ulcer formed in another part of the breast, which was healed by the application of the paste, when it ulcerated in another place, which was also healed. Ulceration took place at other parts, and at last the paste lost its effect, and the disease made rapid progress in spite of every remedy.

Morphia, and other preparations of opium, relieved her sufferings for a short time, and gave her a few hours' sleep; but the disease progressed, and she died on the 7th of January, 1841.

Upon examining the breast and cutting through it, it was hard and pear-like; the integument was involved in the cancerous disease, which extended to the axillary glands. There was a gland in a diseased state just above the middle of the arm; the cervical glands were very considerably diseased, intersecting the muscles, the ribs were brittle, and beneath the surface of the pleura pulmonalis, there were numerous tubercles. Upon examining the liver, similar tubercles were found; but they were larger here, and some situated deep in the glandular structure of that viscus.

REMARKS.

In this case the effect of the exhibition of the chloride of zinc was very remarkable. From the observations made at the time, it would appear as if it had acted by removing the serum that was contained in the cellular tissue, in the throat, side of the chest, and the arm; and as soon as that fluid had been absorbed, the character of the disease appeared to be changed. It then assumed a

tuberculated form; but previously it was more diffused, overspreading a large portion of the body. The beneficial effect of the chloride of zinc paste was very clearly shown, in healing the ulcerated surfaces three or four successive times. This effect had been seen on several occasions; and although the part in this case did not remain healed for a great length of time, other cases have come under notice, where the ulcer had remained healed for many months, and when it had broken out again, the paste had again healed it; and this had been done on four or five occasions, thus preventing the rapid growth of the disease, and prolonging the life of the patient.

C A S E.

A lady consulted me in the early part of July, 1845, in consequence of an enlarged gland in the right armpit, which caused her much uneasiness. She stated that last December her breast was removed, and the wound soon healed; but that she could not move her arm for some time afterwards, on account of it having been tied to her side. She stated, that the tumour removed was of a cancerous nature, that the present swelling appeared, about six weeks ago, and caused her great anx-

iety, particularly after having borne the operation so very courageously. She had the constant dread of the disease returning, and greatly feared that the swelling was of the same nature. Upon examining the swelling, it was found to be an enlarged axillary gland, very movable, and situated at the anterior border of the axilla, behind the edge of the pectoral muscle, it had the characteristic feel of a gland affected with scrofula. The glands above the clavicle were quite healthy; and upon carefully examining the cicatrix, it was found healthy, free from any tumefaction or hardness, excepting at one particular part, at the upper and outer portion of the cicatrix, where was a slight feel of indurated fat of an irregular consistence; but this did not give to the touch any sensation of a cancerous or malignant nature. Her health was very good, and she slept well, and her appetite was excellent. She was most strongly recommended to calm her mind, particularly as the enlarging gland was not of a character to affect her health or be of a serious nature.—She was ordered to apply to it night and morning a small quantity of the following ointment: iodide of potassium, two scruples; spermaceti cerate, one

ounce ; mix, to make an ointment : and was prescribed one of the following pills every night :— Take of the pill of iodide of potassium, with mercury and Dover's powder, half a drachm : mix, to be divided into twelve pills.

She continued this plan of treatment for some time : finding the pain in the cicatrix diminish, and the enlargement of the gland subside, she was then recommended to take proteine, which she did, and found considerable benefit from its use. She afterwards caught a violent cold in the chest, which caused a very distressing cough ; this occasioned the gland to become more painful and swollen, but it soon subsided : and the last time this patient paid me a visit she was gradually recovering.

C A S E.

MRS. B——, aged 48, having six children living, consulted me in April, 1845, on account of a tumour in the left breast, about the size of an egg, with retraction of nipple, and an irregular ulcerated surface, about the size of a shilling on its superior border. She stated that she had felt the tumour for the last four or five years, more particularly at the periods, when she

had expected to be unwell; but that the swelling had increased for the last two years, both in size and uneasiness, more particularly since she had ceased to be in her usual way, which was about two years before. The open surface had made its appearance about four months, and had increased. The disorder was very troublesome to her; and she could not sleep at night, owing to stinging, darting pains running through the swellings up to the armpit. Upon examining the tumour, it was hard and irregular, perfectly movable in every direction, tender when pressed upon, but if gently handled, it did not cause her much uneasiness. She was anxious about it, more particularly as her mother had died of a similar swelling. She had only shown it to her medical attendant in the country, who recommended her to come to town, to consult some surgeon.—A lotion was ordered, composed of poppy decoction, one pint, extract of hemlock, one drachm, chloride of carbon, one drachm and a half. She was directed to apply this constantly warm to the whole swelling, and when dry, to re-apply it. She was ordered two drops of the chloride of carbon in camphor-mixture, to be taken every night; she found immediate relief from the appli-

cation, and passed a very comfortable night. In a fortnight the breast began to have an inflamed appearance ; it became red, and large veins were to be observed running in a radiated direction. The ulcerated surface extended and became black, and the swelling became softer ; sloughing had evidently taken place. The application was continued for a week longer, when the slough had a disposition to be removed, which was encouraged by continually keeping a poultice to it ; and when a fresh one was applied in the morning, the whole excavated surface was injected with a solution of the chloride of carbon. In the middle of May the slough had been entirely removed ; the excavated surface had an irregular, but at the same time not an unhealthy appearance. The paste composed of chloride of zinc and flour was now carefully applied, and allowed to remain on for six hours. It caused a great deal of pain, which was afterwards relieved by a cold poultice ; a slough took place, which was separated in a week's time. We now directed our attention to heal the wound, which we at last accomplished ; and at the end of the first week in June it was completely cicatrized, with very little hardness remaining, and no gland in the axilla

in an indurated state. A cure was then pronounced, which has continued up to the present time.

CASE.

MISS SARAH M——, aged 28, of a fair, delicate complexion, consulted me in January, 1845, respecting an irregular swelling on the inner side of the right breast, which had been coming on for the last six months. She had been regular, but just before these periods the tumour was very painful and troublesome. She was desirous of having it removed if possible. Upon examination it was found to be of a fungoid character; and upon inserting an exploring needle an unhealthy brownish red discharge followed the withdrawal of the instrument. Having observed in one or two cases of fungoid disease, the beneficial result of an application of a solution of the chloride of carbon, it was recommended in this case. She constantly applied a lotion to the swelling, composed of a drachm and a half of chloride of carbon to a pint of water, which was afterwards increased in its strength to two drachms to a pint of water. In the course of six weeks the swellings had evidently sloughed, and a superficial slough appeared at the lower part

of it, the size of a sixpenny-piece. A poultice was now constantly used ; at the end of ten days the slough had completely separated ; the poultice was continued, and in a week's time it had entirely healed. During the period of the swelling, sloughing, and while it was healing, steel and other tonic medicines were administered internally. At the end of March this patient was perfectly cured, with only a slight scar on the original seat of the swelling, with no hardness whatever of any other part of the glandular structure of the breast. This patient has since married, and has every prospect of having a family.

T H E E N D .



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